SUPER®

SUPER P3TDDE

USER'S MANUAL

Revision 1.0c

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Preface

About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPER P3TDDE motherboard. The SUPER P3TDDE supports dual Intel® 370-pin Pentium™ III FCPGA 500 MHz - 1.4 GHz processors with a 512K L2 cache at front side bus speeds of 133, 100 and 66 MHz. Please refer to the support section of our web site (http://www.supermicro.com/TechSupport.htm) for a complete listing of supported processors. FCPGA Pentium III processors are housed in a 370-pin package.

Manual Organization

Chapter 1 includes a checklist of what should be included in your mainboard box, describes the features, specifications and performance of the SUPER P3TDDE mainboard and provides information on the chipset.

Chapter 2 begins with instructions on handling static-sensitive devices. Read this chapter when installing the processors, SDRAM memory modules and for mounting the mainboard in the chassis. Also refer to this chapter for connecting floppy/hard disk drives, the IDE interfaces, the parallel and serial ports and the twisted wires for the power supply, the reset button, the keylock/power LED, the speaker and the keyboard.

If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for the video, the memory and the setup configuration stored in CMOS. For quick reference, a general FAQ (Frequently Asked Questions) section is provided. Instructions are also included for contacting technical support. In addition, you can visit our web site at www.supermicro.com/techsupport.htm for more detailed information.

Chapter 4 includes an introduction to BIOS and provides detailed information on running the CMOS Setup utility.

Chapter 5 provides information on the IDE RAID controller.

Appendix A lists BIOS POST messages.

Appendix B provides POST codes.

Appendix C details BIOS beep codes.

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Chapter 1
Introduction

1-1 Overview

Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance.

Please check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

One (1) Supermicro Mainboard

Two (2) ATA66/100 ribbon cables for IDE devices

One (1) floppy ribbon cable

One (1) Supermicro CD or diskettes containing drivers and utilities

One (1) User's/BIOS Manual

Contacting Supermicro

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SUPER P3TDDE

Figure 1-1. SUPER P3TDDE Image

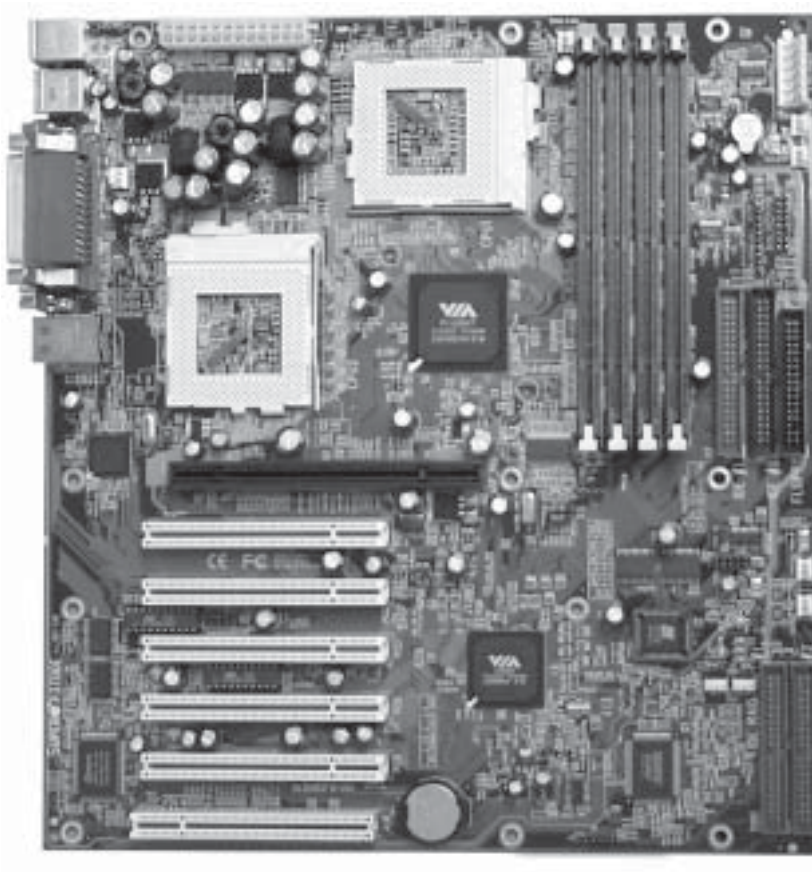
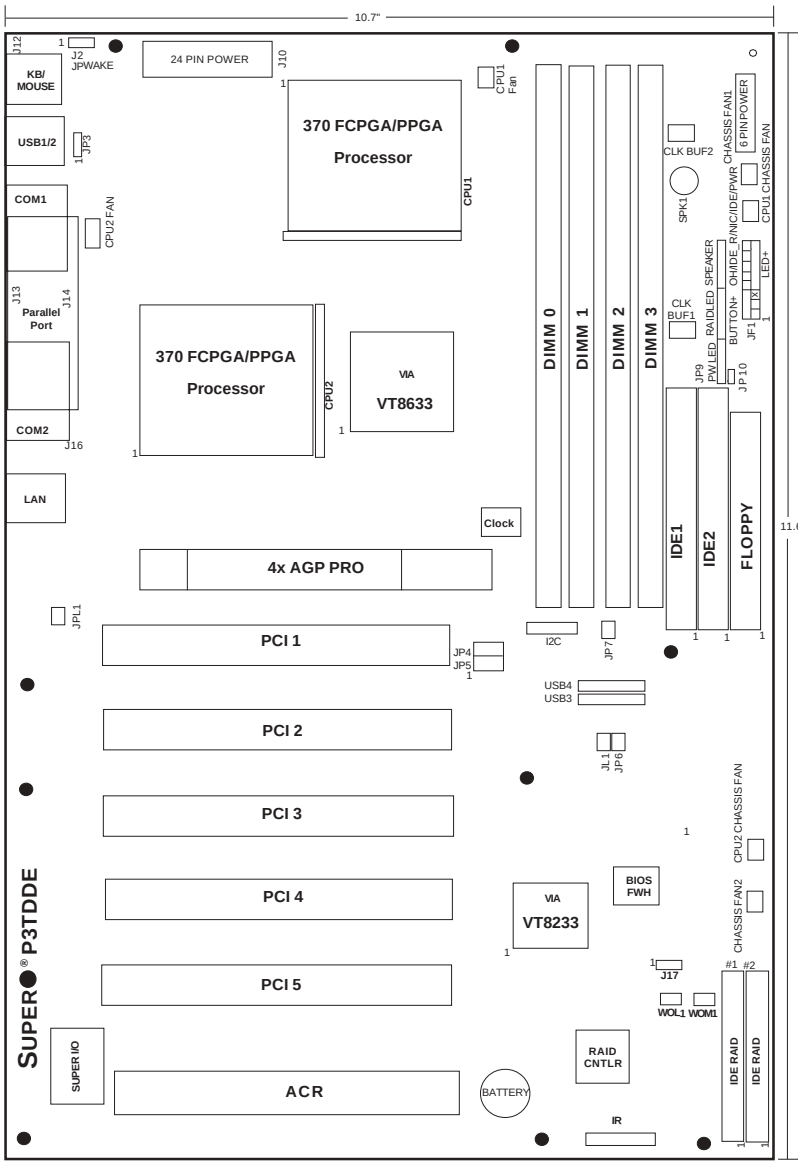


Figure 1-2. SUPER P3TDDE Layout
(not drawn to scale)



P3TDDE Quick Reference

Jumpers	Description	Default Setting
JBT1	CMOS Clear	Pins 1-2 (Normal)
JPWAKE	Keyboard Wake-Up	Pins 1-2 (Disabled)
JPL1	LAN Enable/Disable	Pins 1-2 (Enabled)
JP4, JP5	Front Side Bus Speed	Both: Pins 1-2 (Auto)
JP6	Fan Detection Select	Open (Overheat)
JP7	Fan Detection Select	Closed (CPU Fans)
JP10	Watch Dog Enable	Open (Disabled)
J17	Onboard IDE RAID	Pins 2-3 (Disabled)

Connectors	Description
COM1/COM2	COM1/COM2 Serial Port Connectors
CPU FAN1/2 CPU	Fan Headers
CPU1/2 CHASSIS FAN	Overheat Fan Header
CPU CHASSIS FAN1/2	Chassis Fan Header
DIMM 0/1/2/3	SDRAM Memory slots
D11, D12	IDE RAID Drive #1/2 Connectors
IDE1, IDE2	IDE Hard Disk Drive #1/2 Connectors
JF1	Front Control Panel Connector
JL1	Chassis Intrusion Header
JP1	Floppy Disk Drive Connector
JP8	I2C
JP9	PW_LED, RAID LED & Speaker
J10	ATX 24-Pin Power Connector
J12	PS/2 Keyboard/Mouse
J16	Parallel Printer Port
J18	Infrared Device Header
J19	6-Pin Power Connector
WOM1	Wake-On-Ring Header
WOL1	Wake-on-LAN Header
USB1/2, JUSB1 (USB3/4)	Universal Serial Bus Ports

See Chapter 2 for details on the I/O ports, the Front Control Panel (JF1/2) connectors and the jumper settings. Jumpers not indicated are for test purposes only.

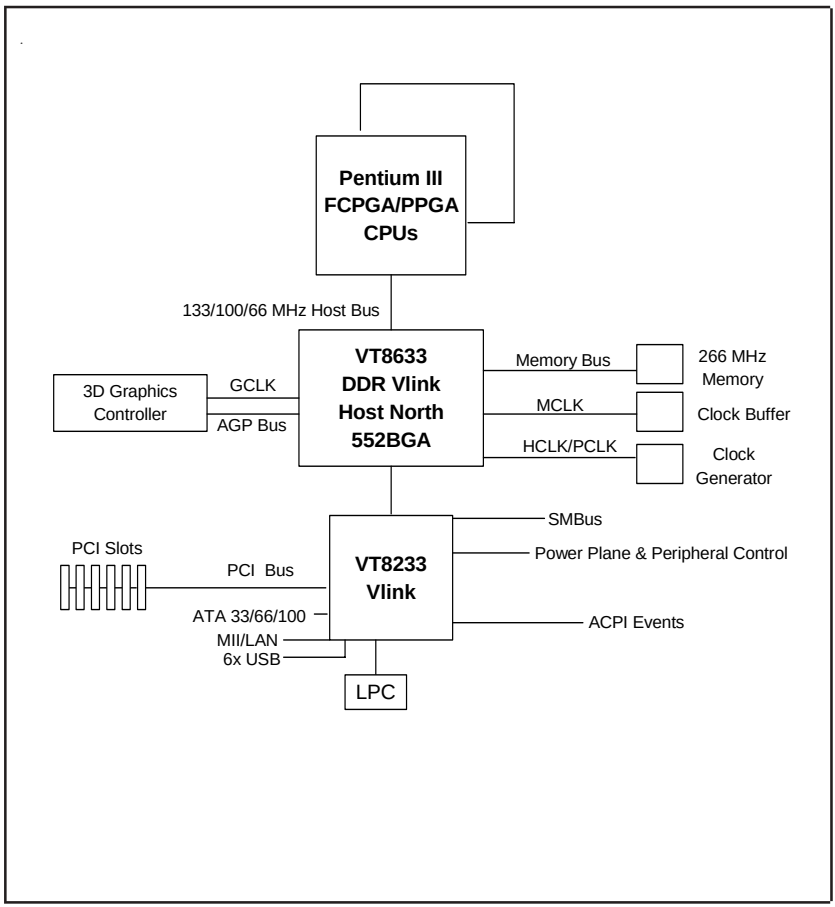


Figure 1-3. VIA 266T Chipset: System Block Diagram

Motherboard Features

CPU

- Dual Intel® 370-pin Pentium™ III FCPGA 500 MHz - 1.4 GHz processors with a 512K L2 cache (including low power Pentium™ III processors) at 133/100/66 MHz Front Side Bus speeds

Memory

- Four PC100/133 SDRAM DIMM sockets to support up to 4 GB SDRAM

Chipset

- VIA Apollo Pro 266T

Expansion Slots

- One 4xAGP Pro
- Five 32-bit PCI (33MHz)
- One ACR

BIOS

- 2 Mb Award® Flash ROM
- ACPI/APM Power Management
- PAC'99 color-coded I/O connectors
- One WOL (Wake-On-LAN) connector
- Internal control of Power-On Mode for recovery from AC power loss

PC Health Monitoring

- Seven onboard voltage monitors for CPU core, chipset voltage, +3.3V, ±5V and ±12V
- Four-fan status monitor with firmware/software on/off control
- Environmental temperature monitor and control
- CPU fan auto-off in sleep mode
- Power-up mode control for recovery from AC power loss
- System overheat LED and control
- System resource alert
- Hardware BIOS virus protection
- Auto-switching voltage regulator for the CPU cores
- Slow blinking LED for suspend state indicator
- BIOS support for USB keyboard

ACPI/PC 98 Features

- Microsoft® OnNow
- Real-time clock wake-up alarm
- Main switch override mechanism
- External modem ring-on

Onboard I/O

- 2 IDE bus master interfaces support UDMA/100
- 1 floppy port interface (up to 2.88 MB)
- 2 Fast UART 16550A compatible serial ports
- 1 EPP (Enhanced Parallel Port)/ECP (Extended Capabilities Port)
- PS/2 mouse and PS/2 keyboard ports
- 1 infrared port
- 4 USB ports
- 2 IDE RAID connectors

Other

- Selectable CPU and chassis fan speed control (set in BIOS)
- Internal/external modem ring-on (WOM)
- Recovery from AC power loss control
- Wake-on-LAN (WOL)
- Multiple FSB clock frequency selections (set in BIOS)

CD Utilities

- BIOS flash upgrade utility (awdflash.exe)
- Drivers for the VIA Apollo Pro 266T chipset

Dimensions

- SUPER P3TDDE - ATX: 10.7" x 11.2" (271.78 mm x 284.48 mm)

1-2 Chipset Overview

The VIA Apollo Pro 266T chipset is a high performance, cost-effective and energy-efficient chipset for the implementation of AGP/V-Link/PCI/LPC computer systems based on 64-bit, 370 Pentium III (66/100/133 MHz) processors.

VIA's Apollo Pro 266T chipset consists of two major components: the VT8633 V-Link Memory Host System controller (North Bridge) and the VT8233 V-Link Client PCI/LPC controller (South Bridge). The VT8633 Host System Controller provides superior performance between the CPU, DIMMs, AGP bus and V-Link inferface with pipelined, burst and concurrent operation. The VT8233 V-Link Client controller is a highly integrated PCI/LPC controller. Its internal bus structure is based on a 66 MHz PCI bus that provides a 2x bandwidth. The VT8233 integrated Clint V-Link controller, which supports a 266 MB bandwidth between the Host/Client V-Link interface, provides a V-Link PCI and V-Link LPC controller. It supports five PCI slots arbitration and decoding for all integrated functions and an LPC bus.

Memory Support and AGP Capability

The VT8633 supports up to 4 GB of SDRAM memory. The DRAM controller supports both SDRAM and VCSDRAM (Virtual Channel SDRAM) in a flexible mix/match manner. The SDRAM interface allows for zero wait state bursting between the DRAM and the data buffers at 66/100/133 MHz.

The VT8633 Controller also supports full AGP v.2.0 capability for maximum bus utilization including 2x and 4x mode transfer, SBA (Side Band Addressing), Flush/Fence commands and pipelined grants. The VT8633 also provides flexible CPU/AGP/PCI remapping control, which supports major AGP-based 3D and DVD multimedia accelerators.

Recovery from AC Power Loss

The BIOS provides a setting that alllows you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must press the power switch to turn the system back on) or for it to return automatically to a power-on state. See the Power Lost Control setting in the BIOS chapter of this manual to change this setting. The default setting is "Always OFF."

1-3 Special Features

Advanced Communications Riser (ACR)

The ACR (Advanced Communications Riser) combines several existing communications buses with new and advanced communications buses to provide for low-cost, high-performance communications solutions. The ACR Specification supports modem, audio, Local Area Network (LAN), and Digital Subscriber Line (DSL). Pins are also reserved for future wireless bus support. The ACR Specification enables riser-based broadband communications, networking peripheral and audio subsystem designs. ACR accomplishes this in an open-standards context.

1-4 PC Health Monitoring

This section describes the PC health monitoring features of the SUPER P3TDDE motherboard.

Seven Onboard Voltage Monitors for the CPU Core, Chipset Voltage, +3.3V, ±5V and ±12V

The onboard voltage monitor will scan these seven voltages continuously. If a voltage becomes unstable, the monitor will give a warning or send an error message to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Four-Fan Status Monitor with Firmware/Software On/Off Control

The PC health monitor can check the RPM status of the cooling fans. The onboard 3-pin CPU and chassis fans are controlled by the power management functions. The thermal fan is controlled by the overheat detection logic.

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will activate the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. It can continue to monitor for overheat conditions even when the CPU is in sleep mode. Once it detects that the CPU temperature is too high, it will automatically turn on the thermal control fan to prevent any

overheat damage to the CPU. The onboard chassis thermal circuitry can monitor the overall system temperature and alert users when the chassis temperature is too high.

CPU Fan Auto-Off in Sleep Mode

The CPU fan activates when the power is turned on. It can be turned off when the CPU is in sleep mode. When in sleep mode, the CPU will not run at full power, thereby generating less heat.

CPU Overheat LED and Control

This feature is available when the user enables the CPU overheat warning function in the BIOS. This allows the user to define an overheat temperature. When this temperature is exceeded, both the overheat fan and the warning LED are triggered.

System Resource Alert

This feature is available when used with Intel's LANDesk Client Manager (optional). It is used to notify the user of certain system events. For example, if the system is running low on virtual memory and there is insufficient hard drive space for saving the data, you can be alerted of the potential problem.

Hardware BIOS Virus Protection

The system BIOS is protected by hardware so that no virus can infect the BIOS area. The user can only change the BIOS content through the flash utility provided by SUPERMICRO. This feature can prevent viruses from infecting the BIOS area and destroying valuable data.

Auto-Switching Voltage Regulator for the CPU Core

The auto-switching voltage regulator for the CPU core can support up to 20A of current and auto-sense voltage IDs ranging from 1.3V to 3.5V. This will allow the regulator to run cooler and thus make the system more stable.

1-5 ACPI/PC 99 Features

ACPI is an acronym for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers automatically. This also includes consumer devices connected to the PC such as VCRs, TVs, telephones and stereos.

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with both Windows 98, Windows NT and Windows 2000. You can check to see if ACPI has been properly installed by looking for it in the Device Manager, which is located in the Control Panel in Windows.

Microsoft OnNow

The OnNow design initiative is a comprehensive, system-wide approach to system and device power control. OnNow is a term for a PC that is always on but appears to be off and responds immediately to user or other requests.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

BIOS Support for USB Keyboard

If the USB keyboard is the only keyboard in the system, the keyboard will function as a normal keyboard during system boot-up.

Real Time Clock Wake-Up Alarm

Although the PC may be perceived to be off when not in use, it is still capable of responding to preset wake-up events. In the BIOS, the user can set a timer to wake-up the system at a predetermined time.

Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button. When the user depresses the power button, the system will enter a SoftOff state. The monitor will be suspended and the hard drive(s) will spin down. Depressing the power button again will cause the whole system to wake-up. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system alive. In case the system malfunctions and you want to turn off the power, just depress and hold the power button for 4 seconds. The power will turn off and no main power will be provided to the motherboard.

External Modem Ring-On

Wake-up events can be triggered by a device such as the external modem ringing when the system is in the SoftOff state. Note that external modem ring-on can only be used with an ATX 2.01 (or above) compliant power supply.

Wake-On-LAN (WOL)

Wake-On-LAN is defined as the ability of a management application to power up a computer remotely that is powered off. Remote PC setup, updates and asset tracking can occur after-hours and on weekends so that daily LAN traffic is kept to a minimum and users are not interrupted. The motherboards have a 3-pin header (WOL) to connect to the 3-pin header on a Network Interface Card (NIC) that has WOL capability. Wake-On-LAN must be enabled in BIOS. Note that Wake-On-Lan can only be used with an ATX 2.01 (or above) compliant power supply.

1-6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

The SUPER P3TDDE accommodates ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1-7 Super I/O

The functions of the disk drive adapter for the Super I/O chip include a floppy disk drive controller that is compatible with industry standard 82077/765, a data separator, write pre-compensation circuitry, decode logic, data rate selection, a clock generator, drive interface control logic and interrupt and DMA logic. The wide range of functions integrated onto the Super I/O greatly reduces the number of components required for interfacing with floppy disk drives. The Super I/O supports four 360 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s. It also provides two high-speed, 16550 compatible serial communication ports (UARTs), one of which supports serial infrared communication.

Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

At any given time, the Super I/O supports one of the followinga : PC-compatible printer port (SPP), Bi-directional Printer Port (BPP), Enhanced Parallel Port (EPP) or Extended Capabilities Port (ECP).

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

The IRQs, DMAs and I/O space resources of the Super I/O can flexibly adjust to meet ISA PnP requirements, which suppport ACPI and APM (Advanced Power Management).

Chapter 2
Installation

2-1 Static-Sensitive Devices

ElectroStatic Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a wrist strap designed to prevent electrostatic discharge that is grounded to the computer chassis.
- Touch a grounded metal computer object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity amongst the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

2-2 Processor Installation

When handling the processor package, avoid placing direct pressure on the label area of the fan.

The following pages cover the installation procedures. You should install the processor in the motherboard first, then install the motherboard in the chassis, then the memory and add-on cards, and finally the cables and drivers. Following the installation procedures in the order they appear in this chapter should eliminate the most common problems encountered when building a system.

IMPORTANT: Always connect the power cord last, and always remove it before adding, removing or changing any hardware components.

Heat Sink

Follow the instructions that came with your processors and heat sinks to attach heat sinks to the processors. Each of your heat sinks should have a 3-pin fan connector, which should be connected to the CPU FAN header. Make sure that good contact is made between the processors and the heat sinks. Insufficient contact, incorrect types of heat sinks, fans, or thermal compound used or improper amount of thermal compound applied on the CPU die can cause a processor to overheat, which may crash the system.

Processor

You are now ready to install the processors. Your motherboard has two 370-pin, FCPGA type sockets, which support 370-pin Pentium III FCPGA (not SEPP) 500 MHz - 1.4 GHz processors with a 512K L2 cache, including low power Pentium III processors. Lift the lever on the FCPGA socket and install with the notched corner of the processor oriented with pin 1. Fully seat the processor into the socket and then close the lever. See Figure 2-1 for views of the FCPGA 370-pin socket before and after processor installation.

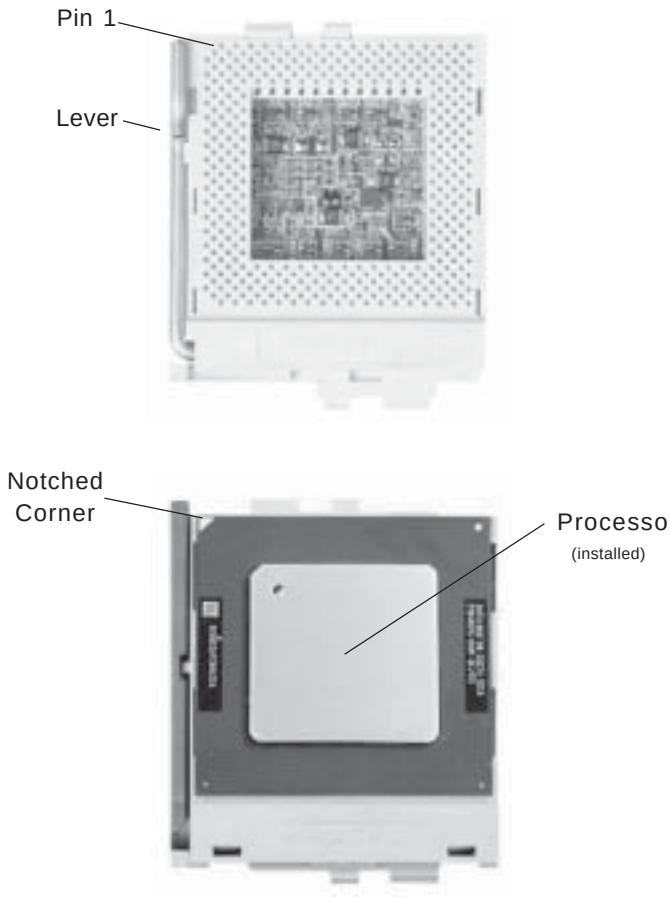


Figure 2-1. FCPGA Socket: Empty and with Processor Installed (low power Pentium III shown)

2-3 Mounting the Motherboard in the Chassis

All motherboards have standard mounting holes to fit different types of chassis. Chassis may include a variety of mounting fasteners made of metal or plastic. Although a chassis may have both types, metal fasteners are the most highly recommended because they ground the motherboard to the chassis. For this reason, it is best to use as many metal fasteners as possible.

2-4 Installing DIMMs

CAUTION

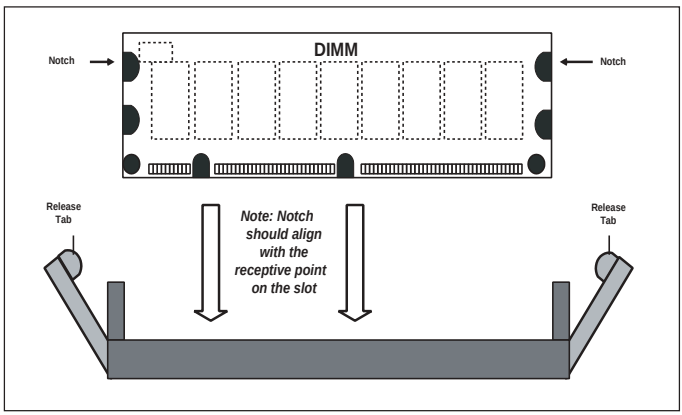
Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

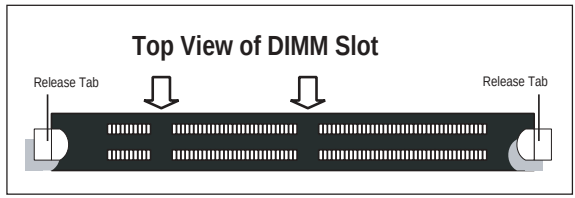
Memory Module Installation (See Figure 2-2)

1. Install SDRAM memory modules into DIMM slots.
2. Insert each memory module vertically into its slot. Pay attention to the two notches along the bottom of the module to prevent inserting the DIMM incorrectly.
3. Gently press down on the memory module until it snaps into place.
4. Four PC133 SDRAM sockets support up to 4 GB of PC133 unbuffered, registered SDRAM. ECC type memory is supported. PC133 and PC100 memory are both fully supported at their respective speeds.

Figure 2-2. Installing SDRAM Module into DIMM Slot

To Install:
Insert module vertically and press down until it snaps into place. Pay attention to the two notches.



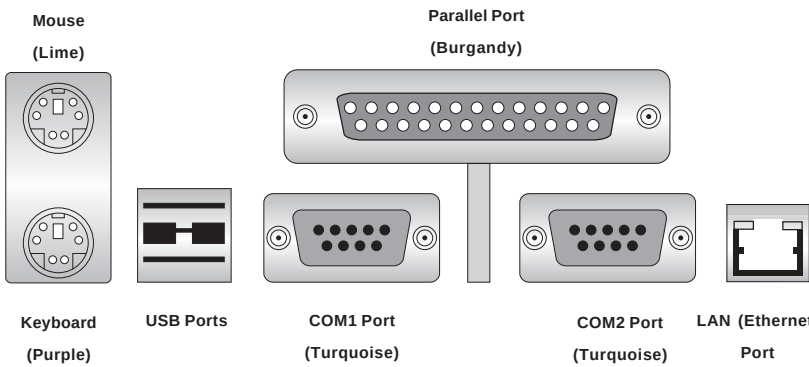


To Remove:
Use your thumbs gently to push each release tab outward to release the DIMM from the slot.

2-5 I/O Port/Front Control Panel Connector Locations

The I/O ports are color coded in conformance with the PC99 specification to make setting up your system easier. See Figure 2-3 below for the colors and locations of the various I/O ports.

Figure 2-3. I/O Port Locations and Definitions

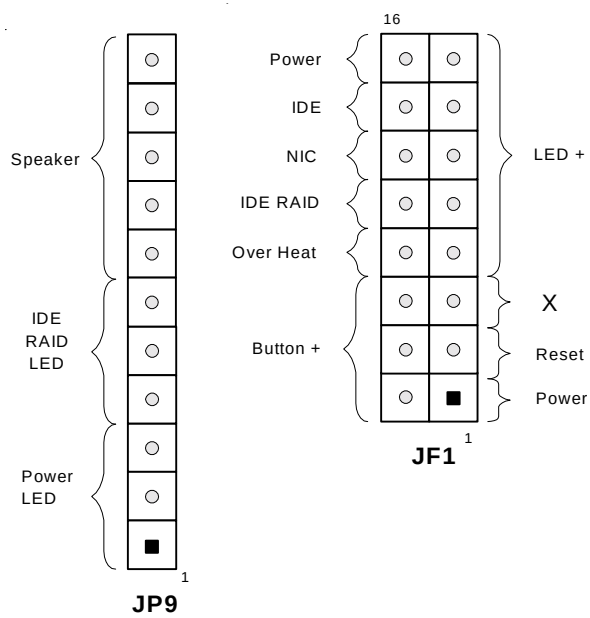


Front Control Panel

JF1 and JP9 contain header pins for various front control panel connectors. See Figure 2-4 for the pin definitions of the speaker, component/ function LEDs, power on and reset button headers.

Refer to Sections 2-6 and 2-7 for connector pin definitions and jumper settings.

Figure 2-4. Front Control Panel Connectors



2-6 Connecting Cables (see previous page for locations)

Power Supply Connector

The primary power supply connector on the P3TDDE meets the SSI (Superset ATX) 24-pin specifications, however, it also supports an ATX 20-pin connector. Thus, both 20-pin ATX and 24-pin SSI connectors can be installed on the P3TDDE as long as the power supply connector is correctly oriented. (Make sure that pin 1 of the PS connector is seated on pin 1 of the header of J10.) If a 24-pin connector is used, please refer to Table 2-1a for pin definitions. (Also see Figure A below for connector orientation). If a 20-pin connector is used, please refer to Table 2-1b for pin definitions. (Also see Figure B below for connector orientation.)

Table 2-1a
ATX Power Supply 24-pin Connector
Pin Definitions (ATX POWER)

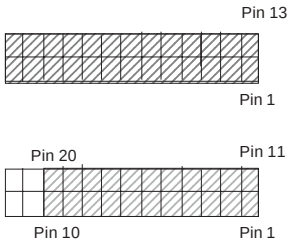
Pin Number	Definition	Pin Number	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON#	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res(NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

Table 2-1b
ATX Power Supply 20-pin Connector Pin Definitions

Pin #	Definition	Pin #	Definition
11	+3.3V	1	+3.3V
12	-12V	2	+3.3V
13	COM	3	COM
14	PS_ON	4	+5V
15	COM	5	COM
16	COM	6	+5V
17	COM	7	COM
18	-5V	8	PW-OK
19	+5V	9	5VSB
20	+5V	10	+12V

Table 2-1c
PS Color Definitions

Color	Definition
Orange	+3.3V
Black	Com
Red	5V
White	Power OK
Yellow	+12V
Purple	5V standby
Brown	-5V
(For reference only)	



6-Pin Power Connector

Refer to Table 2-2 for pin definitions for the 6-Pin connector J19.

Table 2-2
6-Pin Power Connector
(J19)

Pin #	Definition
1	GND
2	GND
3	GND
4	+3.3V
5	+3.3V
6	+5V

Infrared Connector

The header at J18 is for infrared devices. See Table 2-3 for pin definitions. See the Technical Support section of our web page for information on the infrared devices you can connect to the system.

Table 2-3
Infrared Pin Definitions (J18)

Pin Number	Definition
1	+5V
2	Key
3	IRRX
4	Ground
5	IRTX

PW_ON Connector

The PW_ON connector is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. The user can also configure the power on button to function as a suspend button (see the Power Button Mode setting in BIOS). To turn off the power when set to suspend mode, hold down the power button for at least 4 seconds. See Table 2-4 for pin definitions.

Table 2-4
PW_ON Connector Pin Definitions (JF1)

Pin Number	Definition
1	PW_ON
2	Power

Reset Connector

The Reset connector is located on pins 3 and 4 of JF1. This connector attaches to the hardware reset switch on the computer case. See Table 2-5 for pin definitions.

Table 2-5
Reset Connector Pin Definitions (JF1)

Pin number	Definition
3	Reset
4	Ground

Overheat LED

The Overheat connector is located on pins 7 and 8 of JF1. It attaches to an LED to to provide warning of chassis overheating. See Table 2-6 for pin definitions.

Table 2-6
Overheat LED Pin Definitions (JF1)

Pin Number	Definition
7	LED +
8	LED -

IDE RAID LED

The IDE RAID LED header is located on JF1. Attach the IDE RAID hard drive LED cable to pins 9 and 10 of JF1. See Table 2-7 for pin definitions.

Table 2-7
IDE RAID LED
Pin Definitions (JF1)

Pin Number	Definition
9	LED +
10	LED -

NIC LED

The NIC (LAN) LED is located on JF1. Attach the NIC LED cable to pins 11 and 12 of JF1. See Table 2-8 for pin definitions.

Table 2-8
NIC (LED) Pin Definitions (JF1)

Pin Number	Definition
11	LED +
12	LED -

IDE LED

The IDE LED is located on JF1. Attach the IDE hard drive LED cable to pins 13 and 14 of JF1. See Table 2-9 for pin definitions.

Table 2-9
IDE LED Pin Definitions (JF1)

Pin Number	Definition
13	LED +
14	LED -

Power LED

The power LED connector is located on pins 15 to 16 of JF1. See Table 2-10 for pin definitions. This connection was designed for use with Supermicro chassis.

Table 2-10
PWR LED
Pin Definitions (JF1)

Pin Number	Definition
15	LED +
16	LED -

PW_LED Connector

The PW_LED connector is located on pins 1 through 3 of JP9. See Table 2-11 for pin definitions. This connection was designed for use with other chassis that require a 3-pin power LED connection.

Table 2-11
PW_LED
Pin Definitions (JP9)

Pin Number	Definition
1	LED +
2	LED -
3	LED -

RAID_LED Connector

The PW_LED connector is located on pins 4 through 6 of JP9. See Table 2-12 for pin definitions.

Table 2-12
RAID_LED
Pin Definitions (JP9)

Pin Number	Definition
4	LED +
5	LED -
6	LED -

Speaker Connector

The speaker connector is located on pins 7 through 11 of JF9. To use the onboard speaker, leave the jumper in place on pins 10-11 and connect the speaker cable to pins 7-9. For an external speaker, remove the jumper and connect the speaker cable to pins 8-11. See Table 2-13 for pin definitions.

Table 2-13
Speaker
Pin Definitions (JP9)

Pin Number	Definition
7	Spkr (+) Pull-Up
8	Spkr (+) Pull-Up
9	NC
10	Onboard Spkr (-)
11	Spkr (-) Signal

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J12. See Table 2-14 for pin definitions. (The mouse port is above the keyboard port. See Figure 2-3 for locations.)

Table 2-14
PS/2 Keyboard and Mouse Port Pin Definitions (J12)

Pin Number	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Universal Serial Bus (USB)

Four Universal Serial Bus connectors are provided on the P3TDDE. USB1 and USB2 are ports located on the backplane and USB2 and USB3 are headers located near the IDE #1 connector. See Table 2-15 for pin definitions.

Table 2-15
Universal Serial Bus Pin Definitions

USB1

Pin Number	Definition
1	+5V
2	P0-
3	P0+
4	Ground

USB2

Pin Number	Definition
1	+5V
2	P0-
3	P0+
4	Ground

USB3

Pin Number	Definition
1	+5V
2	P0-
3	P0+
4	Ground
5	Ground

USB4

Pin Number	Definition
1	+5V
2	P0-
3	P0+
4	Ground
5	Ground

Serial Ports

Two serial ports (COM1 and COM2) are provided on your board. See Table 2-16 for the pin definitions of connectors J13 and J14). A 10-pin serial ribbon cable is required if connecting a device to a COM header.

Table 2-16
Serial Port (COM) Pin Definitions (J13, J14)

Pin Number	Definition	Pin Number	Definition
1	DCD	6	DSR
2	Serial In	7	RTS
3	Serial Out	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Wake-On-LAN (WOL)

The Wake-On-LAN header is located on WOL1. Refer to Table 2-17 for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this function. (You must also have a LAN card with a Wake-on-LAN connector and cable to use this feature.)

Table 2-17
Wake-On-LAN
Pin Definitions (WOL1)

Pin Number	Definition
1	+5V Standby
2	Ground
3	Wake-up

Wake-On-Ring (WOM1)

The Wake-On-Ring header is located on WOM1. Refer to Table 2-18 for pin definitions. You must enable the Ring Wake-Up setting in BIOS to use this function. (You must also have a modem card with a Wake-on-Ring connector and cable to use this feature.) Both 2-pin and 3-pin WOM headers are provided.

Table 2-18
Wake-On-Ring Pin Definitions (WOM1)

Pin Number	Definition
1	+5V Standby
2	Ground
3	Wake-up

Pin Number	Definition
1	Ground
2	Wake-up

2-pin connector

Fan Headers*

The six CPU and chassis fan headers are designated CPU1/2 FAN, CPU1/2 CHASSIS FAN and CHASSIS FAN 1/2. Refer to Table 2-19 for pin definitions.

Table 2-19
Fan Header Pin Definitions

Pin Number	Definition
1	Ground (black)
2	+12V (red)
3	Tachometer

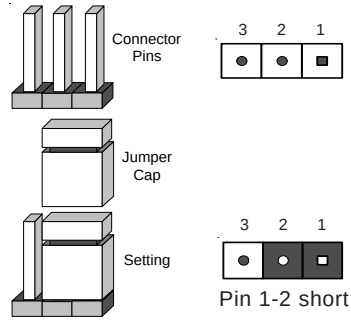
*Caution: These fan headers use DC power

Note: NC indicates "no connection".

2-7 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. On a 2-pin jumper, "Closed" means the jumper is over both pins (to "close" the connection) and "Open" means the jumper is either off or on a single pin only. See the motherboard layout pages for jumper locations.



Front Side Bus Speed

The FSB speed is set with JP4 and JP5. Table 2-20 displays the settings for these two jumpers. The CPU speed can also be changed by software control in BIOS (see the CPU Speed setting). The CPU Speed setting will also show you the actual CPU speed for each FSB speed option selected.

Note: If the system does not reboot after changing the CPU speed, 1) clear CMOS and reboot (as described on the next page) and then set the correct CPU speed with the BIOS setting mentioned above.

Table 2-20
Front Side Bus Speed Jumper Settings
(JP4, JP5)

JP4	JP5	FSB Speed
1-2	1-2	Auto
2-3	2-3	66 MHz
2-3	Open	100 MHz
Open	Open	133 MHz

Note: The Auto setting allows the CPU to set the speed.

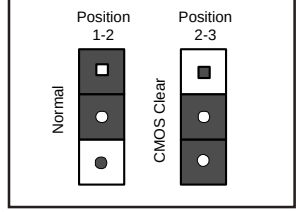
CMOS Clear

Refer to Table 2-21 for instructions on how to clear CMOS. Always remove the AC power cord from the system before clearing CMOS.

Note: For an ATX power supply, you must completely shut down the system, remove the AC power cord, then use JBAT1 to clear CMOS. Replace JBAT1 back to the pin 1-2 position before powering up the system again. Do not use the PW_ON connector to clear CMOS.

Table 2-21
CMOS Clear Jumper Settings (JBT1)

Jumper Position	Definition
1-2	Normal
2-3	CMOS Clear



Keyboard Wake-Up

The JPWAKE jumper (JP2) is used together with the Keyboard Wake-Up function in BIOS. Enable both the jumper and the BIOS setting to allow the system to be woken up by depressing a key on the keyboard. See Table 2-22 for jumper settings.

Note: Your power supply must meet ATX specification 2.01 or higher and supply 720 mA of standby power to use this feature.

Table 2-22
Keyboard Wake-Up Jumper Settings (JP2)

Jumper Position	Definition
1-2	Disabled
2-3	Enabled

Watch Dog Enable

This jumper is used to enable or disable the Watch Dog function. This jumper is used together with the Watch Dog enable function in BIOS. Enable both the jumper and the BIOS setting to use the Watch Dog feature. See the table on the right for pin definitions.

Watch Dog Enable Jumper Settings (JP10)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

LAN Enable/Disable

JPL1 allows you to enable or disable the onboard LAN. See Table 2-23 for jumper settings.

Table 2-23
LAN Enable/Disable
Jumper Settings (JPL1)

Jumper Position	Definition
1-2	Enabled
2-3	Disabled

Fan RPM Detection Select

JP6 and JP7 allow you to choose which of two fans to monitor for RPM speed. JP6 is for the Chassis and Overheat fans and JP7 is for the CPU and CPU Chassis fans. See Table 2-24 for jumper settings.

Table 2-24a
Fan RPM Monitor Select
Jumper Settings (JP6)

Jumper Position	Definition
Closed	Chassis fan
*Open	Overheat fan

*Default position

Table 2-24b
Fan RPM Monitor Select
Jumper Settings (JP7)

Jumper Position	Definition
*Closed	CPU 1/2 fan
Open	CPU chassis fan

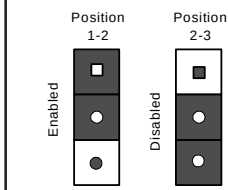
*Default position

Onboard IDE RAID

J17 gives you the option of disabling/enabling the onboard IDE RAID. See Table 2-25 for jumper settings.

Table 2-25
Onboard IDE RAID Enable/Disable
(J17)

Jumper Position	Definition
1-2	Enabled
2-3	Disabled



2-8 Parallel Port, ACP, AGP and Floppy/Hard Disk Drive Connections

Note the following when connecting the floppy and hard disk drive cables.

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.
- The 80-wire ATA66/100 IDE hard disk drive cable that came with your system has two connectors to support two drives. This special cable should be used to take advantage of the speed this new technology offers. The blue connector connects to the onboard IDE connector interface and the other connector(s) to your hard drive(s). Consult the documentation that came with your disk drive for details on actual jumper locations and settings for the hard disk drive.

Parallel Port Connector

The parallel port is located on J16.
See Table 2-26 for pin definitions.

Table 2-26
Parallel (Printer) Port Pin Definitions
(J16)

Pin Number	Function	Pin Number	Function
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

Floppy Connector

The floppy connector is located on JP1. See Table 2-27 for pin definitions.

Table 2-27
Floppy Connector Pin Definitions (JP1)

Pin Number	Function	Pin Number	Function
1	GND	2	FDHDIN
3	GND	4	Reserved
5	Key	6	FDEDIN
7	GND	8	Index-
9	GND	10	Motor Enable
11	GND	12	Drive Select B-
13	GND	14	Drive Select A-
15	GND	16	Motor Enable
17	GND	18	DIR-
19	GND	20	STEP-
21	GND	22	Write Data-
23	GND	24	Write Gate-
25	GND	26	Track 00-
27	GND	28	Write Protect-
29	GND	30	Read Data-
31	GND	32	Side 1 Select-
33	GND	34	Diskette

Table 2-28
IDE Connector Pin Definitions
(IDE#1, IDE#2)

Pin Number	Function	Pin Number	Function
1	Reset IDE	2	GND
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	GND	20	Key
21	DRQ3	22	GND
23	I/O Write-	24	GND
25	I/O Read-	26	GND
27	IOCHRDY	28	BALE
29	DACK3-	30	GND
31	IRQ14	32	IOCS16-
33	Addr 1	34	GND
35	Addr 0	36	Addr 2
37	Chip Select 0	38	Chip Select 1-
39	Activity	40	GND

IDE Connectors

There are no jumpers to configure the onboard IDE interfaces IDE1 and IDE2. Refer to Table 2-28 for pin definitions. You must use the ATA100/66 cable included with your system to benefit from the ATA100/66 technology.

4x AGP Pro Slot

The 4x AGP Pro slot is backward compatible with AGP and 4xAGP graphics cards, which have fewer pins than AGP Pro cards. Because of this, care must be taken when installing a graphics card into this slot, as doing so incorrectly can damage your motherboard. For AGP Pro cards, you should remove the orange sticker covering one end of the slot. For other cards, leave this sticker in place and make sure your card does not plug into the section it covers. A general rule of thumb is to make sure your card fills the center section of pins first, then the end toward the edge of the motherboard if there are more. If the I/O shield of your card is flush with the edge of the motherboard, the card should be inserted correctly.

AGP Pro Slot

2-9 Installing Software Drivers

After all the hardware has been installed you must install the software drivers. The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard. After inserting this CD into your CDROM drive, the display shown in Figure 2-5 should appear. (If this display does not appear, click on the My Computer icon and then on the icon representing your CDROM drive. Finally, double click on the S "Setup" icon.)

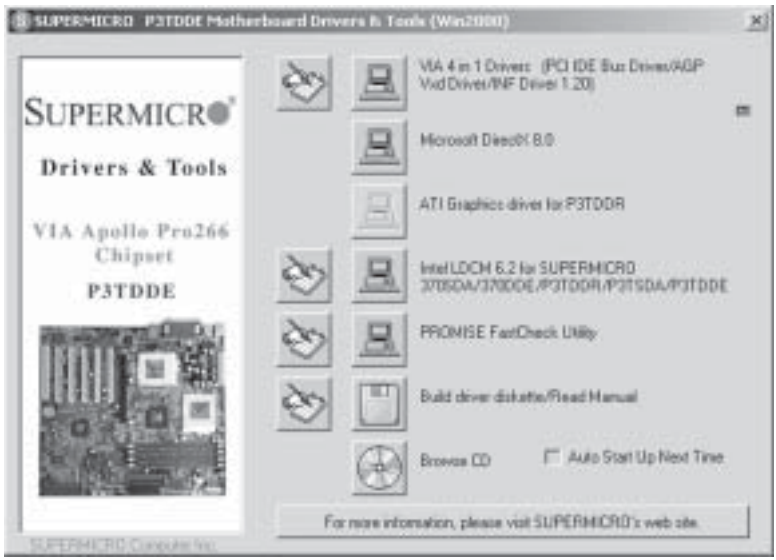

SUPERMICRO P3TDDE Motherboard Drivers & Tools (Win2000)
SUPERMICRO
Drivers & Tools
VIA Apollo Pro266 Chipset
P3TDDE
VIA 4 in 1 Drivers (PCI IDE Bus Driver/AGP Vxd Driver/INF Driver 1.20)
Microsoft DirectX 8.0
ATI Graphics driver for P3TDDR
Intel LDCM 6.2 for SUPERMICRO 370SDA/370DDE/P3TDDR/P3TSDA/P3TDDE
PROMISE FastCheck Utility
Build driver diskette/Read Manual
Browse CD
Auto Start Up Next Time
For more information, please visit SUPERMICRO's web site

Figure 2-5. Driver/Tool Installation Display Screen

Click the icons showing a hand writing on paper to view the readme files for each item. Click the tabs to the right of these *in order from top to bottom* to install each item one at a time. **After installing each item, you must reboot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents of the CD.

Chapter 3
Troubleshooting

3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the "Technical Support Procedures" and/or "Returning Merchandise for Service" section(s) in this chapter. **Note: Always disconnect the power cord before adding, changing or installing any hardware components.**

Before Power On

1. Make sure no short circuits exist between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install a CPU (making sure it is fully seated) and connect the chassis speaker and the power LED to the motherboard. (Check all jumper settings as well.)

No Power

1. Make sure no short circuits exist between the motherboard and the chassis.
2. Verify that all jumpers are set to their default positions.
3. Check that the 115V/230V switch on the power supply is properly set.
4. Turn the power switch on and off to test the system.
5. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on but you have no video, remove all the add-on cards and cables.
2. Use the speaker to determine if any beep codes exist. Refer to Appendix A for details on beep codes.

NOTE

If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended. For I/O port 80h codes, refer to App. B.

Memory Errors

1. Make sure the DIMM modules are properly and fully installed for the amount of memory desired.
2. Determine if different speeds of DIMMs have been installed and verify that the BIOS setup is configured for the fastest speed of memory used. It is recommended that all DIMMs in the system have the same speed.
3. For DIMMs, make sure you are using PC133 or PC100 compliant SDRAM.
4. Check for bad DIMM modules or slots by swapping modules between slots and noting the results.
5. Make sure all memory modules are fully seated in their slots.

3-2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, note that as a motherboard manufacturer, Supermicro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our web site (http://www.supermicro.com/techsupport.htm) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our web site at http://www.supermicro.com/techsupport/download.htm.

Note: Not all BIOS can be flashed depending on the modifications to the boot block code.

3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:
   •Motherboard model and PCB revision number

•BIOS release date/version (this can be seen on the initial display when your system first boots up)

•System configuration

An example of a Technical Support form is on our web site at < http://www.supermicro.com/techsupport/contact_support.htm >.

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at < support@supermicro.com > or by fax at (408) 503-8019.

3-3 Frequently Asked Questions

Question: What are the various types of memory that the P3TDDE motherboard can support?

Answer: The P3TDDE has four 168-pin DIMM slots that support up to 4 GB of unbuffered 3.3V SDRAM. ECC memory is also supported. Please refer to Chapter 2 for additional information.

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are not experiencing problems with your system. Updated BIOS files are located on our web site at < http://www.supermicro.com >. Please check our BIOS warning message and the info on how to update your BIOS on our web site. Also, check the current BIOS revision and make sure it is newer than your BIOS before downloading. Select your motherboard model and download the BIOS file to your computer. Unzip the BIOS update file and you will find the readme.txt (flash instructions), the awdflash.exe (BIOS flash utility) and the BIOS image (xxxx.bin) files. Copy these files onto a bootable floppy and reboot your system. It is not necessary to set BIOS boot block protection jumpers on the motherboard. At the DOS prompt, enter the command "awdflash." Type in the BIOS file that you want to update (xxxx.bin).

Question: After flashing the BIOS my system does not have video. How can I correct this?

Answer: If the system does not have video after flashing your new BIOS, it indicates that the flashing procedure failed. To remedy this, first clear CMOS per the instructions in this manual and retry the BIOS flashing procedure. If you still do not have video, please use the following **BIOS Recov-**

ery Procedure. First, make sure the JPWAKE jumper is disabled. Then, turn your system off and place the floppy disk with the saved BIOS image file (see above FAQ) in drive A. Press and hold <Alt> and <F2> at the same time, then turn on the power with these keys pressed until your floppy drive starts reading. Your screen will remain blank until the BIOS program is done. If the system reboots correctly, then the recovery was successful. The **BIOS Recovery Procedure** will not update the boot block in your BIOS.

Question: What's in the CD that came with my motherboard?

Answer: The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include VIA Pro 266 chipset drivers for Windows plus security and audio drivers.

Question: Why can't I turn off the power using the momentary power on/off switch?

Answer: The instant power off function is controlled in BIOS by the Power Button Mode setting. When the On/Off feature is enabled, the motherboard will have instant off capabilities as long as the BIOS has control of the system. When the Standby or Suspend feature is enabled or when the BIOS is not in control such as during memory count (the first screen that appears when the system is turned on), the momentary On/Off switch must be held for more than four seconds to shut down the system. This feature is required to implement the ACPI features on the motherboard.

Table 3-1. Shared IRQs

PCI 1 shares an IRQ with PCI5
PCI 2 shares an IRQ with the IDE RAID controller
PCI 3 shares an IRQ with the LAN controller
PCI 4 shares an IRQ with 4xAGP Pro

Question: I installed my microphone correctly but I can't record any sound. What should I do?

Answer: Go to <Start> <Programs> <Accessories> <Entertainment> and then <Volume Control>. Under the Properties tab, scroll down the list of devices in the menu and check the box beside "Microphone".

Question: How do I connect the ATA66/100 cable to my IDE device(s)?

Answer: The 80-wire/40-pin ATA66/100 IDE cable that came with your system has two connectors to support two drives. This special cable must be used to take advantage of the speed the ATA66/100 technology offers. Connect the blue connector to the onboard IDE header and the other connector(s) to your hard drive(s). Consult the documentation that came with your disk drive for details on actual jumper locations and settings.

3-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alternation, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Notes

Chapter 4
BIOS

4-1 Introduction

This chapter describes the Award BIOS for the P3TDDE. The Award ROM BIOS is stored in a Flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Refer to the Manual Download area of the Supermicro web site (located at http://www.supermicro.com) for any changes to BIOS that may not be reflected in this manual.

System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The AwardBIOS Flash chip stores the system parameters, such type of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a back-up battery provides power to the BIOS Flash chip, enabling it to retain system parameters. Each time the computer is powered-on the computer is configured with the values stored in the BIOS ROM by the system BIOS, which gains control at boot-up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot, see below.

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Chipset and Power menus. Section 4-3 gives detailed descriptions of each parameter setting in the Setup utility.

4-2 Running Setup

Optimal default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the Main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see on next page).

When you first power on the computer, the AwardBIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after turning the system on, or
2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Del> key to activate the Main Setup Menu:

Press DEL to enter SETUP

4-3 Main BIOS Setup

All Main Setup options are described in this section. The Main BIOS Setup screeen is displayed below.

Use the Up/Down arrow keys or the <Tab> key to move among the different settings in the above menu.

Press the <ESC> key to exit theCMOS Setup Menu and use the Left/Right arrow keys to enter other categories of BIOS settings. The next section describes in detail how to navigate through the menus.

Main BIOS Setup Menu

Main Setup Features

Date/Time

Set the system date and time. Key in the correct information in the fields when the options of "Month, DD, YYYY" and "HH:MM:SS" appear in the screen. Press the <Enter> key to save the data.

Drive A/Drive B

These options allow the user to set the type of floppy disk drive installed in the system. The settings are: "None", "360K, 5.25in", "1.2M, 5.25in", "720K, 3.5in", "1.44M, 3.5in", "2.88M, 3.5in".

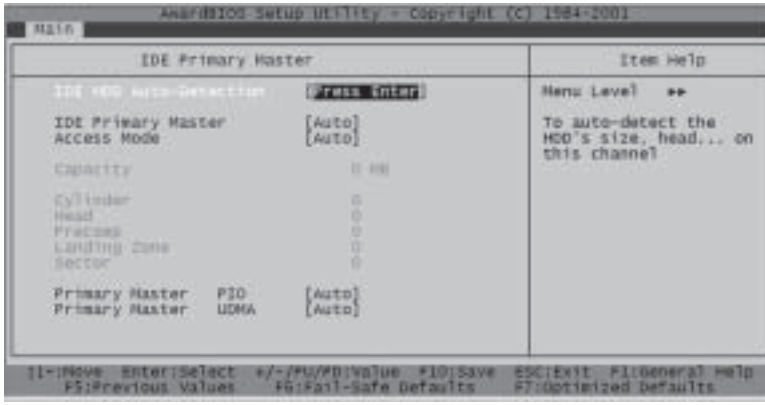
Swap Floppy Drive

These options allow the user to swap the names of floppy disk drives installed in the system, should there be two floppy disk drives installed on the main board. The settings are: "Disabled" and "Enabled." The default setting is "Disabled".

IDE Primary Master/IDE Primary Slave/IDE Secondary Master/ IDE Secondary Slave

These options allow the user to set the parameters of the IDE Primary Master/Slave and IDE Secondary Master/Slave slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the

correct configurations accordingly. The items included in the sub-menu are:



IDE HDD Auto-Detection

Press the <Enter> key to activate the "IDE HDD Auto-Detection" function to automatically detect the parameters of the IDE hard disk drives installed in the system, such as the sizes of the hard drives.

IDE Primary Master

This option allows the user to determine the manner in which the AwardBIOS sets the settings for the IDE Primary Master Device. The settings are "None", "**Auto**" and "Manual".

Access Mode

This item determines the location through which the AwardBIOS access the IDE Primary Master Device. The settings are "CHS", "LBA", "Large" and "**Auto**".

IDE Primary Master PIO / IDE Primary Slave PIO / IDE Secondary Master PIO / IDE Secondary Slave PIO

This IDE PIO (Programmed Input/Output) field allows you to set a PIO mode (0-4) for the IDE Primary device designated Mode 0 thorugh Mode 4. Each increase in mode number indicates a corresponding increase in performance. The settings are "Auto", "Mode 0", "Mode 1", "Mode 2", "Mode3", "Mode 4" and "**Auto**".

IDE Primary Master UDMA / IDE Primary Slave UDMA / IDE Secondary Master UDMA / IDE Secondary Slave UDMA

This option is available only when your IDE hard drive supports Ultra DMA/33 and the operating environment also includes a DMA drive (Windows 95 OSR2 or a third-party IDE bus master driver). If your IDE hard drive and your system software both support Ultra DMA/33, select "Auto" to enable BIOS support. The settings are "**Auto**", and "Disabled".

Video

This option allows the user to select the setting for the default video device. The settings are "**EGA/VGA**", "CGA 40", "CGA 80", and "MONO".

HaltOn

This option allows the user to select the situation in which you want the BIOS to stop the POST process and notify you about the status of the system. The settings are "All Errors", "No Errors", "**All, but Keyboard**", "All, but Diskette" and "All, but Disk/Key".

Base Memory

This field displays the amount of conventional memory detected during boot-up. This is normally set to "640K".

Extended Memory

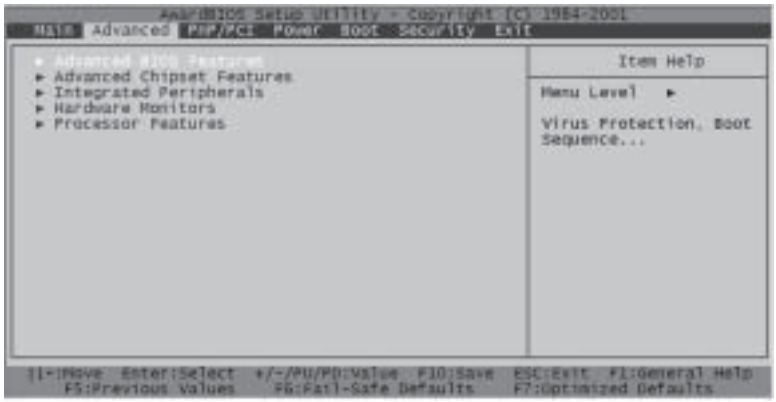
This feature displays the amount of extended memory detected during boot-up. This is normally set to "65535K".

Total Memory

This feature displays the amount of total memory available in the system. This is normally set to "1024K".

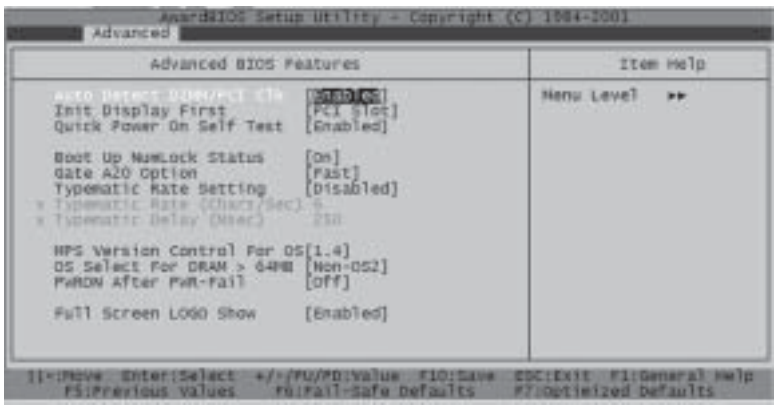
4-4 Advanced BIOS Setup

Choose the Advanced BIOS Setup from the Award BIOS Setup Utility main menu with the <Left> and <Right> arrow keys. You should see the display shown below. Select one of the items in the left frame of the screen to go to the sub screen for that item. Advanced BIOS Setup options are displayed by highlighting the option using the arrow keys. All Advanced BIOS Setup options are described in this section.


AwardBIOS Setup Utility - Copyright (C) 1984-2001
Main Advanced PnP/PCI Power Boot Security Exit
Advanced BIOS Features
Advanced Chipset Features
Integrated Peripherals
Hardware Monitors
Processor Features
Item Help
Menu Level ▶
Virus Protection, Boot Sequence...
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

4-4.1 Advanced BIOS Features

When the required item in the "Advanced BIOS Features" is highlighted, press the <Enter> key to activate the selection, as shown below:


AwardBIOS Setup Utility - Copyright (C) 1984-2001
Advanced
Advanced BIOS Features
Item Help
Menu Level ▶▶
Init Display First [PCI Slot]
Quick Power On Self Test [Enabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
MPS Version Control For OS [1.4]
OS Select For DRAM > 64MB [Non-OS2]
PWRON After PWR-Fail [Off]
Full Screen LOGO Show [Enabled]
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Auto Detect DIMM/PCI CLK

If enabled, this feature will allow the BIOS automatically to detect the status of the DIMM/PCI clock. The settings are "**Enabled**" and "Disabled."

Init Display First

This option allows the user to determine which display device will first be activated when the sytem boots up -- either a installed in the PCI slot or a device intalled in the AGP slot. The settings are "PCI slot" and "**AGP**".

Quick Power-On Self Test

If enabled, this feature will speed up the process of POST (Power On Self Test) after the computer is switched on. The settings are "Enabled" and "**Disabled**". If "Disabled", the POST procedure will take place at its normal speed.

Boot Up NumLock Status

This option enables the system to check the status of the NumLock key during boot-up. The settings are "**On**" and "Off".

Gate A20 Option

This option allows the user to determine if the chipset or the keyboard controller should have the control over Gate A20. The settings are "Normal" or "**Fast**". If set to "Normal", a pin in the keyboard controller controls Gate A20. If "Fast" is selected, the chipset will have the control over Gate A20.

Typematic Rate Setting

Key strokes repeat at a rate pre-determined by the keyboard controller. The key stroke repeating rate is called the typematic rate. If "Enabled", this option allows the user to set the "Typematic Rate" of the system. If "Disabled", the user will not be allowed to set the "Typematic Rate." The settings are "Enabled" and "**Disabled**". (When disabled, "Typematic Rate" and "Typematic Delay" will not be displayed.)

Typematic Rate (Chars/Sec)

If enabled, the option allows the user to set the number of times a key stroke repeats itself in a second when the key is held down. The settings are "**6**", "8", "10", "12", "15", "20", "24" and "30".

Typematic Delay

The option sets the delay time after a key is held down before it begins to repeat the keystroke. The settings are "**250**", "500", "750" and "1000".

MPS Version Control for OS

This option sets the modes of the MPS Version Control for the operating system. The settings are "**1.4**" and "1.1".

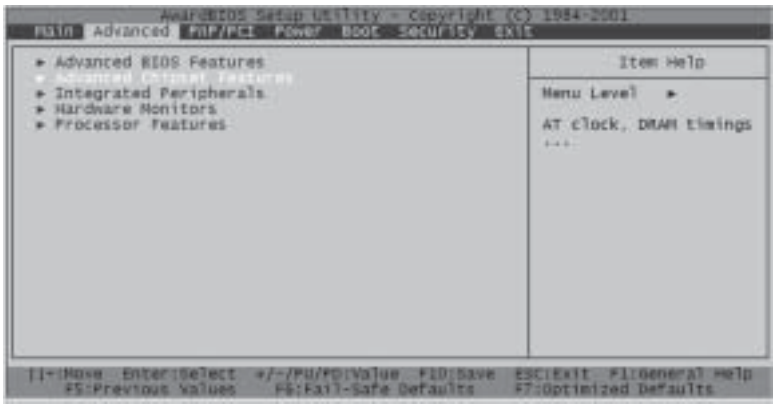
OS Select For DRAM > 64MB

The option allows the user to select the operating system that requires a DRAM memory greater than 64 MB in order to function properly. The settings are "OS2", and "**Non OS2**".

Power On after PWR Fail

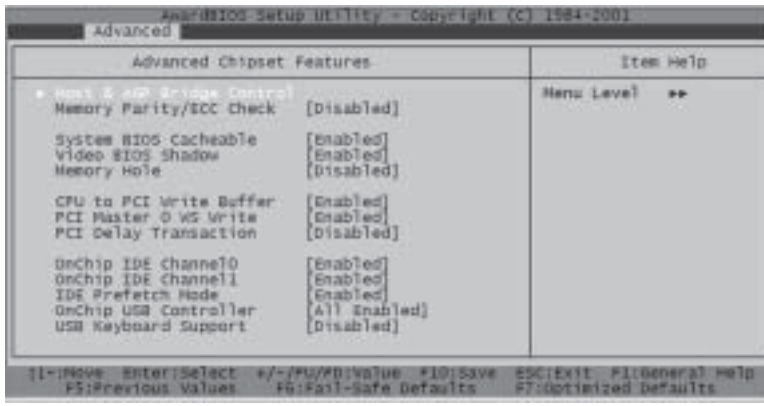
This option allows the user to determine if the system's power will be automatically turned "on" or remain "off" after power is restored after an outtage. The settings are "On", "**Off**" and "Former Status".

4-4.2 Advanced Chipset Features


AwardBIOS Setup Utility - Copyright (C) 1984-2001
Main Advanced PnP/PCI Power Boot Security EXIT
► Advanced BIOS Features
► Advanced Chipset Features
► Integrated Peripherals
► Hardware Monitors
► Processor Features
Item Help
Menu Level ►
AT clock, DRAM timings
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

This section documents the functions that the AwardBIOS provides the user in configuring the system based upon the special features offered by the VIA Apollo 266 chipset. The VIA Apollo 266 chipset manages the operations of major components of the board, such as the bus speed of the CPU, access to the memory and the communication between the PCI slots and the CPU. Normally, the default settings for the Advanced Chipset Features listed in the section are pre-configured by the manufacturer for optimal system performance. It is not recommended that the user alter the default settings. This section is provided as an emergency measure for the user to restore the functions of the system when the critical data stored in the BIOS is lost.

When the desired item in "Advanced Chipset Features" is highlighted, press the <Enter> key to access its settings.


AwardBIOS Setup Utility - Copyright (C) 1984-2001
Advanced
Advanced Chipset Features
Item Help
Menu Level ▸▸
Memory Parity/ECC Check [Disabled]
System BIOS Cacheable [Enabled]
Video BIOS Shadow [Enabled]
Memory Hole [Disabled]
CPU to PCI Write Buffer [Enabled]
PCI Master 0 WS Write [Enabled]
PCI Delay Transaction [Disabled]
OnChip IDE Channel0 [Enabled]
OnChip IDE Channel1 [Enabled]
IDE Prefetch Mode [Enabled]
OnChip USB Controller [All Enabled]
USB Keyboard Support [Disabled]
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Host & AGP Bridge Control

This section documents the AwardBIOS management of the bus links between the host and bridge devices.

Memory Parity / ECC Check

Select "Enabled" only if the system DRAM contains parity to add a parity check to the boot-up memory tests. The settings are "**Enabled**" and Disabled".

System BIOS Cacheable

If enabled, the system BIOS information stored in the BIOS ROM (Read Only Memory) chip will be written and temporarily stored in the "cacheable" section of the memory, so the CPU has faster access to the information. The settings are "**Enabled**" or "Disabled".

Video BIOS Cacheable

If enabled, the Video BIOS information stored in the BIOS ROM (Read Only Memory) chip will be written and temporarily stored in the "cacheable" section of the memory for faster access. The settings are "**Enabled**" and "Disabled".

Memory Hole

To improve the performance of the sytem, a certain section of the memory will be reserved for the use of the devices installed in the PCI slots. This section of memory must be mapped into the memory space below 16 MB. The settings are "15M-16M" and "**Disabled**".

CPU to PCI Write Buffer

To improve the performance of the system, a certain section of the memory will be designated as "Write Buffer" to temporarily store the data CPU writes to PCI to provide faster access. This information can be exe.codes or operational instructions for the system. The settings are "**Enabled**" and "Disabled".

PCI Master 0 WS Write

If enabled, the transimission of PCI Master Write PCI Master Write signals will have no delays. The settings are "**Enabled**" and "Disabled".

PCI Delayed Transition

If enabled, the PCI signal transition will be delayed. The settings are "Enabled" and "**Disabled**".

On-Chip IDE Channel 10

If enabled, BIOS support of onchip IDE 10 will be activated. The settings are "**Enabled**" and "Disabled".

OnChip IDE Channel 11

If enabled, BIOS support of onchip IDE 11 will be activated. The settings are "**Enabled**" and "Disabled".

IDE Prefetch Mode

If enabled, the IDE Prefetch Mode function will be activated. The settings are "**Enabled**" and "Disabled".

On-Chip AC97 Modem

If enabled, this option allows the user to activate the BIOS support of On-Chip MC 97 Modem. The settings are "**Disabled**" and "Enabled".

On-Chip AC97 Modem

If enabled, this option allows the user to activate the BIOS support of On-Chip MC 97 Modem. The settings are "**Disabled**" and "Enabled".

On-Chip LAN Controller

If enabled, this option allows the user to activate the BIOS support of On-Chip LAN Controller. The settings are "**Disabled**" and "Enabled".

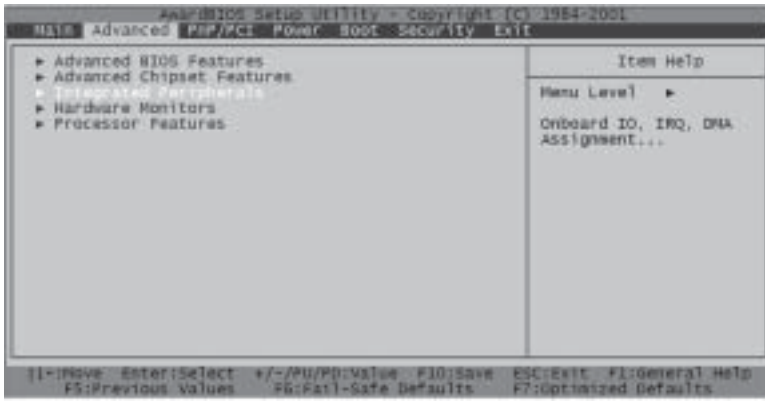
On-Chip USB Controller

If enabled, this option will allow the user to acctivate the BIOS support of On-Chip USB Controllers. The settings are "All Disabled", "**All Enabled**", "1&2 USB Ports", "2&3 USB Ports", "1 USB Port", "2 USB Port" and "3USB port".

USB Keyboard Support

If enabled, this option allows the user to activate the BIOS support of the On-Chip USB Keyboard Controller. The settings are: "**Disabled**" and "Enabled".

4-4.3 Integrated Peripherals


Main Advanced PnP/PCI Power Boot Security Exit
► Advanced BIOS Features
► Advanced Chipset Features
► Integrated Peripherals
► Hardware Monitors
► Processor Features
Item Help
Menu Level ►
Onboard IO, IRQ, DMA Assignment...
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

When the item "Integrated Peripherals" is highlighted, hit the <Enter> key to activate the sub-menu screen. When the above menu appears, select the items and press the <Enter> key to display the options.

Onboard FDC Controller

Select "Enabled" if your system has a floppy disk controller (FDC) installed on the main board and you wish to use it. The settings are "**Enabled**" and "Disabled".

Onboard Serial Port 1 / Port 2

This option allows the user to set the address and the corresponding IRQ for the Serial Port1 and Serial Port 2. The settings are "Disabled" , "3F8/ IRQ4", "2F8/IRQ3", "3E8/IRQ4", "2E8/IRQ3" and "Auto ." The default setting for Serial Port1 is "3F8/IRQ4" and the default for Port 2 is is "2F8/IRQ3".

UART Mode Select

This option allows the user to select the UART mode for BIOS. The settings are "IrDA", "ASKIR" and "**Normal**".

RxD, TxD Active

This option allows the user to set the settings for the function of "RxD, TxD Active." The settings are "Hi, Hi", "**Hi, Lo**", "Lo, Hi" and "Lo, Lo".

IR Transmission Delay

If "Enabled", the transmssion of IR (infrared) signals will be delayed. The settings are "**Enabled**" and "Disabled".

UR2 Duplex Mode

This option sets the UR2 Duplex Mode. The settings are "Full" and "**Half**".

Use IR Pins

This item is used to change the Use IR Pins setting. The settings are "RxD2, TxD2" and "**IR-Rx2Tx2**".

Onboard Parallel Port

This option allows the user to set the address and the corresponding IRQ for the onboard parallel port. The settings are "Disabled", "**378/IRQ7**", "278/IRQ5" and "3BC/IRQ7".

Parallel Port Mode

This option sets the mode for the onboard parallel port. The settings are "SPP", "EPP", "**ECP**" and "ECP+EPP".

EPP Mode Select

This option allows the user to select the EPP mode. The settings are "EPP 1.9" and "**EPP 1.7**".

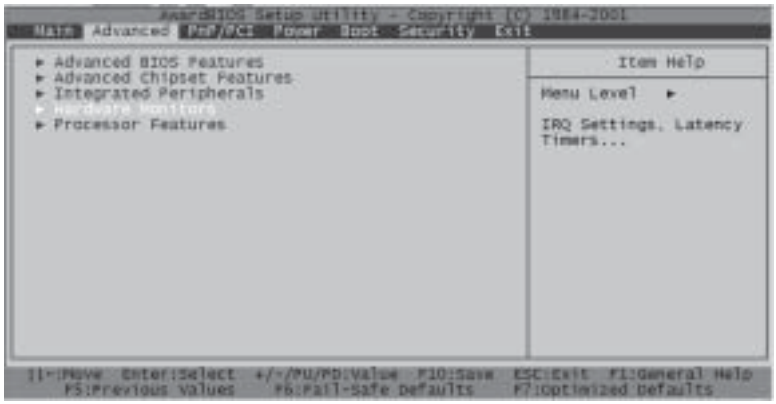
ECP Mode Use DMA

This option allows the user to select the ECP use DMA mode. The settings are "1" and "**3**".

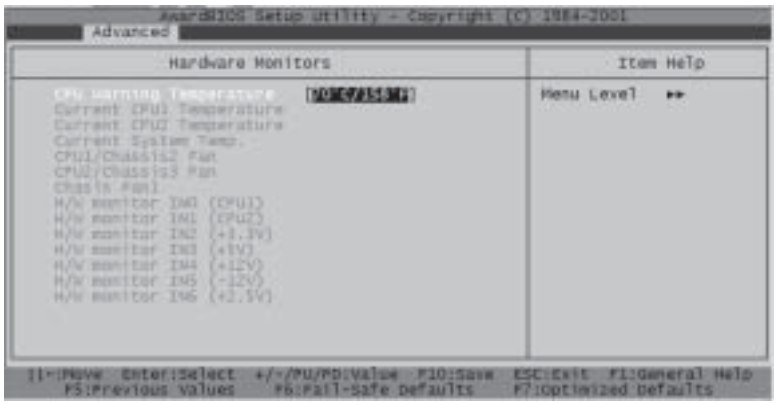
Watch Dog Feature

This option allows the user to enable or disable the Watch Dog Feature. The settings are "Enabled" and "**Disabled**".

4-4.4 Hardware Monitors


AwardBIOS Setup Utility - Copyright (C) 1984-2001
Main Advanced PnP/PCI Power Boot Security Exit
► Advanced BIOS Features
► Advanced Chipset Features
► Integrated Peripherals
► Hardware Monitors
► Processor Features
Item Help
Menu Level ►
IRQ Settings, Latency Timers...
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

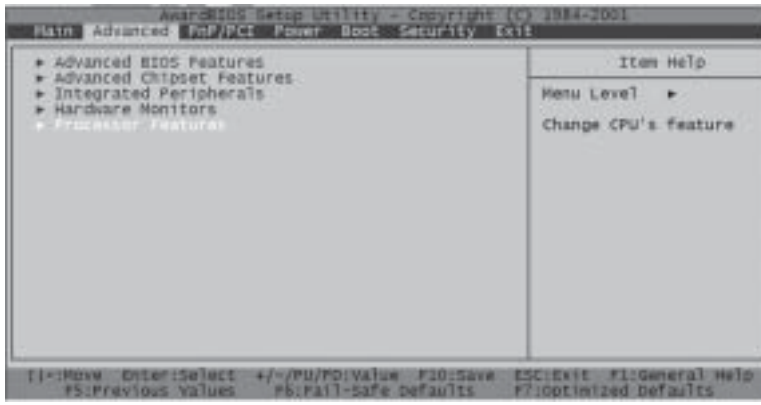
When the item "Hardware Monitors" is highlighted, press the <Enter> key to activate the sub-menu.



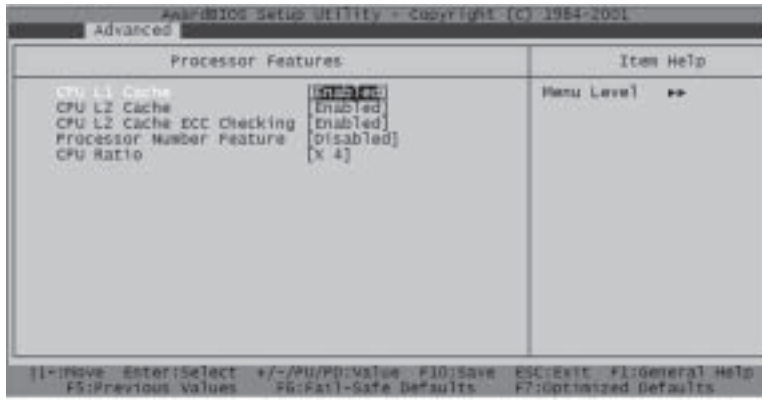
CPU Warning Temperatures

This item allows the user to set the CPU temperature threshold. When the CPU temperature reaches the threshold temperature set by the user, the alarm will sound and a warning message will be displayed on the screen. The settings are "Disabled", "60^{0}C/140^{0}F", "65^{0}C/149^{0}F", "70^{0}C/158^{0}F", "75^{0}C/167^{0}F", "80^{0}C/176^{0}F", "**85C/185F**" and 90C/194F".

4-4.5 Processor Features


AwardBIOS Setup Utility - Copyright (C) 1984-2001
Main Advanced PnP/PCI Power Boot Security Exit
► Advanced BIOS Features
► Advanced Chipset Features
► Integrated Peripherals
► Hardware Monitors
► Processor Features
Item Help
Menu Level ►
Change CPU's feature
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

When the item "Processor Features" is highlighted, press the <Enter> key to activate the sub-menu as seen below.


AwardBIOS Setup Utility - Copyright (C) 1984-2001
Advanced
Processor Features
Item Help
CPU L1 Cache [Enabled]
CPU L2 Cache [Enabled]
CPU L2 Cache ECC Checking [Enabled]
Processor Number Feature [Disabled]
CPU Ratio [X 4]
Menu Level ►►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

CPU L1 & L2 Cache

Set this option to "Enabled" to activate the CPU L1 and L2 cache. The settings are "Disabled" and "**Enabled**".

CPU L2 Cache ECC Check

Set this option to "Enabled" to activate ECC Checking to take place with the CPU L2 Cache. The settings are "Disabled" and "**Enabled**".

Processor Number Feature

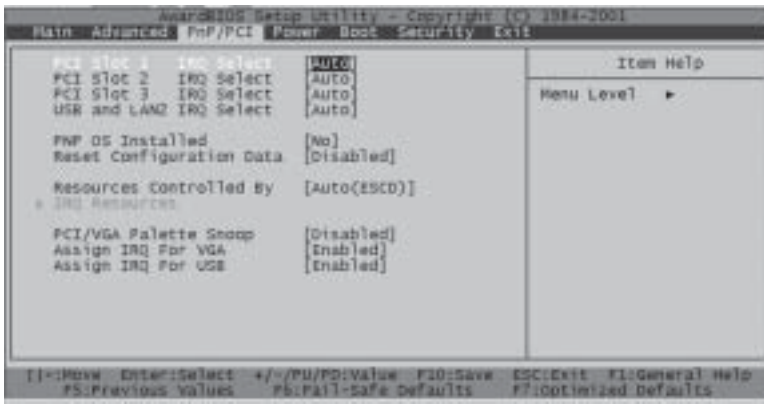
Set this option to "Enabled" to enable the reporting of your computer system's CPU ID numbers. The settings are "Enabled" and "**Disabled**".

CPU Clock Ratio

This option allows the user to set the CPU Clock Ratio. The settings are "x3", "x3.5", "x4","x4.5", "x5", "x5.5","x6", "x6.5", "x7", "x7.5", "x8", "x8.5", "x9", "x9.5", "x10", "x10.5", "x11", "x11.5", "x12", "**x13**", "x14", "x15" and "16."

4-5 PnP/PCI Configurations

With the item "PnP/PCI" highlighted on the main menu bar, press the <Enter> key to activate the following screen:


Main Advanced PnP/PCI Power Boot Security Exit
PCI Slot 1 IRQ Select [Auto]
PCI Slot 2 IRQ Select [Auto]
PCI Slot 3 IRQ Select [Auto]
USB and LAN2 IRQ Select [Auto]
PNP OS Installed [No]
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
PCI/VGA Palette Snoop [Disabled]
Assign IRQ For VGA [Enabled]
Assign IRQ For USB [Enabled]
Item Help
Menu Level ▶
↑↓:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

PCI Slot 1/5, 2, 3, and 4 IRQ Select

The IRQ for the various PCI slots can be configured manually. The settings are "**Auto**", "3", "4", "5", "7", "9", "10", "11", "12", "14" and "15".

PNP OS Installed

Select "Yes" if you are using an operating system that supports Plug and Play solutions. Select "**No**" if you need the BIOS to configure non-boot devices.

Reset Configuration Data

If you have installed a new add-on device and it has caused conflicts in system configuration that results in a system boot-up failure, then select "Enabled" to reset "Extended System Configuration Data" (ESCD) for the OS to reboot the system. The settings are "Enabled" and "**Disabled**".

Resources Controlled By

AwardBIOS can automatically configure all the boot devices and all Plug and Play compatible devices. However, if this item is set to "Auto (ESCD)", the user will not be able to set the IRQ DMA and memory address since the Award BIOS will automatically assign the values to these fields. The settings are "**AUTO (ESCD)**" and "Manual."

PCI/VGA Palette Snoop

For best system performance, this item has been preset to "Disabled" by the manufacturer. The settings are "Enabled" and "**Disabled**".

Assign IRQ for VGA

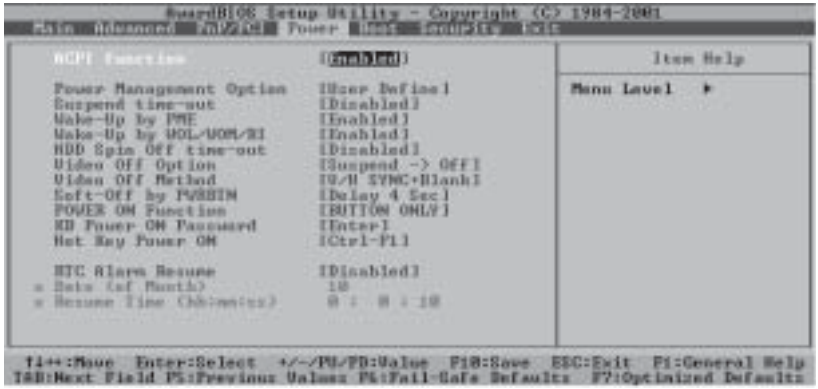
If "Enabled", you allow AwardBIOS to assign an IRQ for the VGA devices. The settings are "**Enabled**" and "Disabled".

Assign IRQ for USB

If "Enabled", you allow the AwardBIOS to assign IRQ for the USB devices. The settings are "**Enabled**" and "Disabled".

4-6 Power Management

When the Item "Power" is highlighted on the main menu bar, hit the <Enter> key to activate the following screen:


AwardBIOS Setup Utility - Copyright (C) 1984-2001
Main Advanced PnP/PCI Power Boot SecurITy Exit
ACPI Function [Enabled]
Power Management Option [User Define]
Suspend time-out [Disabled]
Wake-Up by PME [Enabled]
Wake-Up by WOL/WOM/RI [Enabled]
HDD Spin Off time-out [Disabled]
Video Off Option [Suspend -> Off]
Video Off Method [V/H SYNC+Blank]
Soft-Off by PWRBTN [Delay 4 Sec]
POWER ON Function [BUTTON ONLY]
KB Power ON Password [Enter]
Hot Key Power ON [Ctrl-F1]
RTC Alarm Resume [Disabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

ACPI Function

This item allows you to enable and disable the functions included in the Advanced Configuration and Power Management software. The settings are "**Enabled**" and "Disabled".

Power Management Option

This option sets the power saving level for the system, especially for HDD Power Down, Doze Mode and Suspend Mode. The settings are "**User Define**", "Min. Saving" and "Max. Saving".

Suspend Mode

This item sets the system suspend time-out mode. The settings are "**Disabled**", "1 Min", "2 Min", "4 Min", "6 Min", "8 Min", "10 Min", "20 Min", "30 Min", "40 Min" and 1 Hr".

Wake-Up by PME

If "Enabled", the user is able to "wake up" the system by a Power Management Event. The settings are "**Enabled**" and "Disabled".

Wake-Up by WOL/ WOM / RI

Select "Enabled" to allow BIOS to activate the Modem Ring Resume function. The settings are "**Enabled**" and "Disabled".

HDD Spin Off Timeout

If "Enabled", this option will allow the AwardBIOS to power-down the hard disk drive after a time delay to avoid losing data. The settings are "**Disabled**", and "1 min" through "15 min" in one minute increments.

Video Off Option

This option sets the status of the video device and monitor when the system is in the Suspend Mode. When set to "Always On", the video device and the monitor will always be on when the system is in the suspend mode. When the option is set to "**Suspend-Off**", the video device and the monitor will be turned off when the system is in the suspend mode.

Video Off Method

This item determines the manner in which the monitor is turned off. The settings are "Blank Screen", "V/H SYNC+Blank" and "DPMS". Select "**V/H SYNC+Blank**" to turn off the vertical and horizontal synchronization ports and the monitor. Select "Blank Screen" to turn off the video buffer and the monitor. Select "DPMS" to initiate display power management signals.

Soft-off by PWR-BTTN

This item determines the system's "Soft-off" mode when the user presses the power-button. The settings are "**Instant-off**" and "Delay 4 Sec".

Power On Function

This setting allows the user to determine the method by which the system activates the power on function. The settings are "Password", "Hot Key", "Mouse Left", "Mouse Right", "Any key", "**BUTTON ONLY**" and "Keyboard 98."

KB Power On Password

This item allows the user to set the password to activate the power on function through keyboard. Press the <Enter> key to enter the password.

Hot Key Power On

This option allows the user to set the hot key to activate the power on function. The settings are "**Ctrl F1**", "Ctrl-F2", "Ctrl-F3", "Ctrl-F4", "Ctrl-F5", "Ctrl-F6", "Ctrl-F7", "Ctrl-F8", "Ctrl-F9", "Ctrl-F10", "Ctrl-F11" and "Ctrl-F12".

RTC Alarm Resume

If "Enabled", this option will allow AwardBIOS to resume the RTC (Real Time Clock) Alarm activities. The default settings are "Enabled" and "**Disabled**".

4-7 Boot-up Devices

When the Item "Boot" is highlighted on the main menu bar, press the <Enter> key to activate the following screen:

Main Advanced PnP/PCI Power Boot Security Exit
Boot RDM Order
First Boot Device [Floppy]
Second Boot Device [CDROM]
Third Boot Device [HDD-0]
Boot Other Device [Enabled]
Virus Warning [Disabled]
Boot Up Floppy Seek [Enabled]
Item Help
Menu Level ▶
↑↓:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

AwardBIOS attempts to load the operating system from devices specified by the users in a user-specified sequence.

First Boot Device

This item allows the user to select the first boot-up device. The settings are "**Floppy**", "LS120", "HDD-0", "SCSI", "CDROM", "HDD-1", "HDD-2", "HDD-3", "ZIP100", "USB-HDD", "USB-ZIP", "USB-CDROM", USB-HDD", "LAN" and "Disabled".

Second Boot Device

This item allows the user to select the second boot-up device. The settings are "Floppy", "LS120", "HDD-0", "SCSI", "**CDROM**", "HDD-1", "HDD-2", "HDD-3", "ZIP100", "USB-HDD", "USB-ZIP", "USB-CDROM", USB-HDD", "LAN" and "Disabled".

Third Boot Device

This item allows the user to select the third boot-up device. The settings are "Floppy", "LS120", "**HDD-0**", "SCSI", "CDROM", "HDD-1", "HDD-2", "HDD-3", "ZIP100", "USB-HDD", "USB-ZIP", "USB-CDROM", USB-HDD", "LAN" and "Disabled".

Boot Other Device

If enabled, this option enables the BIOS to load the OS from another device rather than the ones that have been specified as the first, second and third boot-up devices. The settings are "**Enabled**" and "Disabled".

Onboard LAN Boot ROM

This setting determines whether the boot ROM BIOS of the onboard LAN chip is called. The settings are "Enabled" and "**Disabled**".

Virus Warning

This item allows the user to choose the Virus Warning feature for the IDE Hard Drive Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, the BIOS will display a warning message and an audible alarm will be activated. The settings are "Enabled" and "**Disabled**."

Boot Up Floppy Seek

Set this option to "Enabled" to allow the BIOS to test floppy drives to determine whether they have 40 tracks or 80 tracks. The settings are "**Enabled**" and "Disabled."

4-8 Security Setup

When the Item "Security" is highlighted on the main menu bar, hit the <Enter> key to activate the following screen:

AwardBIOS Setup Utility - Copyright (C) 1984-2001
Main Advanced PnP/PCI Power Boot Security Exit
Set Supervisor Password
Set User Password
Security Option [Setup]
Item Help
Menu Level ►
Change/Set/Disable Password
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Set Supervisor's Password

When the item "Set Supervisor Password" is highlighted on the above screen, press the <Enter> key to activate the following screen. When prompted, type in Supervisor's password in the dialogue box to set or to change Supervisor's Password.

AwardBIOS Setup Utility - Copyright (C) 1984-2001
Main Advanced PnP/PCI Power Boot Security Exit
Set Supervisor Password
Set User Password
Security Option [Setup]
Item Help
Menu Level ►
Change/Set/Disable Password
Enter Password:
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Set User's Password

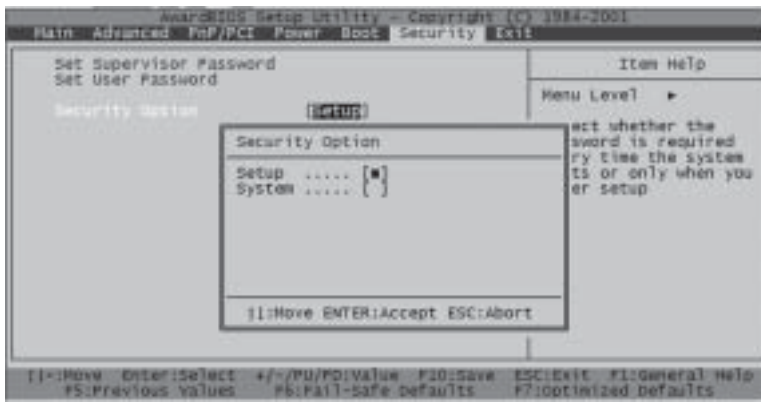
When the item "Set User's Password" is highlighted on the Security Main Menu, press the <Enter> key to activate the following screen. When prompted, type in User's password in the dialogue box to set or to change the User's Password.

Main Advanced PnP/PCI Power Boot Security Exit
Set Supervisor Password
Set User Password
Security Option [Setup]
Item Help
Menu Level ▶
Change/Set/Disable Password
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Security Option

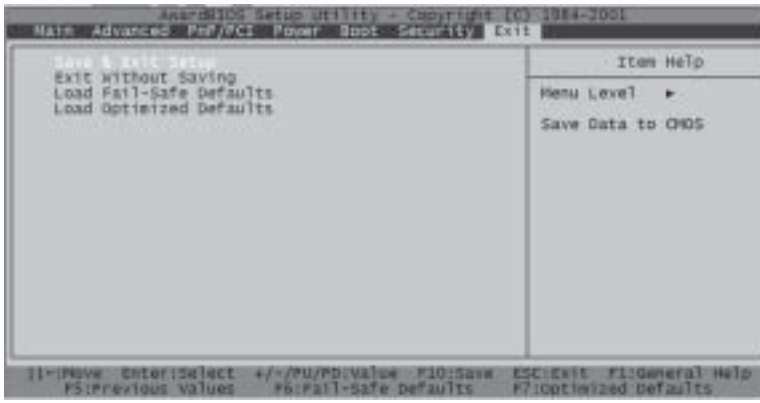
When the item "Security Option" is highlighted on the Security Main Menu, press the <Enter> key to activate the screen shown below.

This option allows the user to determine if the password is required every time the system boots up or only when you enter the CMOS setup. The settings are "System" and "**Setup**".



4-9 Exit Setup

Select "Exit" from the Main Menu bar and press the <Enter> key to activate the following screen:


AwardBIOS Setup Utility - Copyright (C) 1984-2001
Main Advanced PnP/PCI Power Boot Security Exit
Save & Exit Setup
Exit Without Saving
Load Fail-Safe Defaults
Load Optimized Defaults
Item Help
Menu Level ▶
Save Data to CMOS
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous values F6:Fail-Safe defaults F7:Optimized defaults

Save & Exit Setup

If you highlight the letter "Y" and press <Enter>, you will save any changes you've made in the BIOS program (CMOS) before you exit. Your system should then continue with the boot-up procedure. The options are "Y", and "**N**".

Exit without Saving

If you highlight the letter "Y" and press <Enter>, any changes you've made in the CMOS will not be saved when you exit the CMOS Setup. Your system should then continue with the boot-up procedure.

Load Fail-Safe Defaults

Press the key "Y" to load the BIOS Fail-Safe default values for the most stable system operation. The settings are "Yes" and "**No**".

Load Optimal Defaults

Press the key "Y" to load the default values for the optimal system performance. The settings are "Yes" and "**No**".

Notes

Chapter 5
IDE RAID Controller

5-1 Introduction to the FastTrak 100 RAID Controller

The P3TDDE contains a Promise Technology FastTrak100 RAID controller installed onboard. Promise designed the FastTrak100 PDC20267 to provide a cost-effective, high performance RAID controller that adds performance and/or reliability to PC desktops and servers using Ultra ATA/100, Ultra ATA/66 or EIDE drives.

FastTrak100 supports striping (RAID 0), mirroring (RAID 1), striping/mirroring (RAID 0+1) or spanning (JBOD) operations. With striping, identical drives can read and write data in parallel to increase performance. Mirroring increases read performance through load balancing and elevator sorting while creating a complete backup of your files. Striping with mirroring offers both high read/write performance and error tolerance. Spanning uses the full capacity of all attached drives without requiring identical drive sizes, but offers no other RAID functionality.

A FastTrak100 striped array can double the sustained data transfer rate of Ultra ATA/66 drives. FastTrak100 fully supports Ultra ATA/100 specification of up to 100 MB/sec per drive, depending upon individual drive specifications.

FastTrak100 also offers fault tolerant, data redundancy for entry-level network file servers or simply for desktop PC users wanting to continually protect valuable data on their PC. FastTrak100 offers RAID 1 mirroring (for two drives) and RAID 0+1 mirroring and striping (for four drives) to protect data. Should a drive that is part of a mirrored array fail, FastTrak100 uses the mirrored drive (which contains identical data) to assume all data handling. When a new replacement drive is later installed, FastTrak100 rebuilds data to the new drive from the mirrored drive to restore fault tolerance.

FastTrak100's bootable BIOS supports individual drives larger than 8.4 GB. With FAT32 and NTFS partitioning, the array can be addressed as one large single volume.

Keys Features and Benefits

The following information offers an overview of the major features of your new Promise FastTrak100. It is divided into two areas: Advanced Hardware Design and Compatibility.

Advanced Hardware Design	
Features	**Benefits**
Supports data striping (RAID 0), mirroring (RAID 1), and striping/mirroring combination (RAID 0+1)	Provides dramatic increase in drive performance and/or fault tolerant options. Offers performance customization and data rebuilds from the BIOS menu.
Supports Ultra DMA 5/4/3/2/1/0, DMA 2/1/0	Burst data transfer rates up to 100MB/sec from Ultra ATA/100 drives to boost overall system performance.
PCI Plug-n-Play, PCI Interrupt sharing and *coexists* with mainboard IDE controllers	Easy to install; support four ATA drives on the FastTrak100 while still supporting 4 devices on motherboard ATA controller.
Supports concurrent dual IDE controller operation	Drive workload is distributed in parallel between members of the array.
Supports IDE bus master operation	Allows multiasking during disk transfers which increase CPU efficiency. The CPU is free to process tasks during IDE data transfers through the PCI Bus to/from system memory.
Utilizes FastBuild™ automenu from the FastTrak100 onboard BIOS	Offers pre-set application specific settings which can be optimized for Desktop, Server, or A/V Editing. Has "Auto Setup" option for quick and easy array builds.
Displays status and error checking messages during bootup	Notifies user of possible errors and allows for recovery of mirrored drive arrays directly from FastBuild™.
Employs the latest Promise PCI Ultra ATA/100 ASIC technology.	Fully supports Ultra ATA/100 specifications with 100 MB/sec timing and CRC error-checking at high speeds.
Mirroring supports automatic background rebuilds	Fault tolerance can be restored automatically without rebooting

Compatibility	
Features	**Benefits**
Complies with PCI v2.1 Local Bus standard	Provides highest level of hardware compatibility.
Compliant with PCI IDE Bus Master standard. PCI IDE Bus Master support for Windows 98/95, Windows NT 3.5x, 4.0	Provides 32-bit I/O, IDE Bus Master, and Ultra ATA performance for optimal system performance.
Tested compatiblity to coexist with Mainboards that have integrated IDE controllers	Improves system performance of new and existing installations including mainboards with Intel chipsets.
Compatible with Ultra ATA/100, Ultra ATA/66, Ultra ATA/33, EIDE and Fast ATA-2 drives supporting multi-word DMA	Works with newest and current IDE drive specifications. Promise engineers experienced with IDE devices perform verification testing with major drive manufacturers and development partners.
Features LBA and Extended Interrupt13 drive translation in controller onboard BIOS	Breaks capacity barriers for support of drives greater than 8.4GB in capacity. Offers flexible storage options for space demanding applications.

5-2 Installing Drivers

This section details the FastTrak100 driver installation when used with various operating systems. The software includes the driver necessary to identify FastTrak100 to the operating system.

- For Windows 2000, see below
- For Microsoft Millennium, see page 5-5
- For Windows 95/98, see page 5-6
- For Windows 3.1/DOS, see page 5-8
- For Windows 4.x, see page 5-10

Windows 2000

Installing Driver During New Windows 2000 Installation

1a. Floppy Install: Boot the computer with the Windows 2000 installation diskettes.

1b. Floppyless Install: Boot from floppy and type “WINNT”. After files have been copied, the system will reboot. On the reboot, press <F6> after the message “Setup is inspecting your computer’s hardware configuration...” appears.

1c. CD-ROM Install: Boot from the CD-ROM. Press <F6> after the message “Press F6 if you need to install third party SCSI or RAID driver” appears.

2. When the “Windows 2000 Setup” window is generated, press “S” to Specify an Additional Device(s)

3. Press “O” to select “Other” and press the “Enter” key.

4. Insert the Promise Technology® driver diskette into drive A: and press “Enter” key.

5. Choose “Win2000 Promise FastTrak100 Controller” from the list that appears on screen, then press the “Enter” key.

6. The Windows 2000 Setup screen will appear again saying “Setup will load support for the following mass storage devices:” The list will include “Win2000 Promise FastTrak100 Controller”..

NOTE: If you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, continue to step 7.

7. From the Windows 2000 Setup screen, press the Enter key. Setup will now load all device files and then continue the Windows 2000 installation.

Installing Driver in Existing Windows 2000 System

***WARNING**: If you will be moving the boot drive containing the existing Windows 2000 operating system to a mirrored RAID 1 array on the FastTrak100 card, the FastTrak100 driver MUST be loaded to the hard drive while it is still attached to your existing hard drive controller. Do not attach this drive or any other hard drive to the FastTrak100 controller card before completing this step.*

After installing the FastTrak100 card and rebooting your system, Windows 2000 setup will show a "New Hardware Found" dialog box. Under Windows 2000, the "PCI RAID Controller" will be displayed.

1. In the dialog box, choose "Driver from disk provided by hardware manufacturer" button.
2. In the A: drive, insert the FastTrak100 driver diskette.
3. Type "A:\WIN2000" in the text box. Press "Enter".
4. Choose "Win2000 Promise FastTrak100 Controller" from the list that appears on screen, then press the "Enter" key.
5. The Windows 2000 Setup screen will appear again saying "Setup will load support for the following mass storage devices – Win2000 Promise FastTrak100 controller". The FastTrak100 driver will now be copied on to the system and entered into the Windows 2000 driver database.
6. When the "System Settings Change" dialog box appears, remove the floppy diskette and click on "Yes" to restart the system. Windows 2000 will then restart for the driver installation to take effect.
7. Power off your system, then attach your hard drives to the FastTrak100 controller card.

Confirming Windows 2000 Installation

1. From Windows 2000, open the Control Panel from "My Computer" followed by the System icon.
2. Choose the "Hardware" tab, then click the "Device Manager" tab.
3. Click the "+" in front of "SCSI & RAID Controllers hardware type." The driver "Win2000 Promise FastTrak/FastTrak100 Controller" should appear.

Microsoft Millennium

Installing Drivers During Millennium Installation

The following details the installation of the FastTrak100 drivers while installing Microsoft's Millennium (with the FastTrak100 controller card already in place). If you are installing the FastTrak100 drivers on a system with Millennium already installed, see "Installing Drivers with Existing Millennium System."

1. Install Microsoft Millennium fully.
2. After installation, go the "Start" menu and choose "Settings."
3. From the "Settings" menu, choose "Control Panel."
4. In the "Control Panel" window, double-click on the "System" icon.
5. In the "System" window, choose the "Device Manager" tab.
6. In the hierarchical display under "Other Devices" is a listing for "PCI RAID Controller." Choose it and then press the "Properties" button.
7. Choose the "Driver" tab in the "Properties" window, choose "Update Driver," and then press "Next."
8. Choose "Search for a better driver than the one your device is using now (recommended)," then press "Next."
9. Choose "Specify Location," and then type "A:\WINME" in the text box.
10. Insert the "FastTrak100 Driver" diskette into the A: drive.
11. Press the "Next" button. A message informing you that Windows Millennium has found "Windows Millennium Promise FastTrak100 Controller" should appear.
12. Press "Next," then "Finish," then "Yes" when asked if you want to restart your computer. Be sure to remove the diskette from drive A:.

Installing Drivers with Existing Millennium System

The following section details the installation of FastTrak100 drivers on a system that has Millennium already installed and running. If you're installing the Ultra100 drivers on a system during an installation of Millennium, see "Installing Drivers During Millennium Installation."

1. After installing the FastTrak100 controller card and configuring the hard drives, power up the system and boot.
2. The "Add New Hardware Wizard" will appear, informing you that it has found a "PCI RAID Controller."
3. Click on "Next," and from the generated list box, choose "Search for a better driver than the one your device is using now."
4. Click on "Next," and from the generated choices, choose "Specify a location."
5. Insert the "FastTrak100 Driver" diskette in drive A:.
6. Type "A:\WINME" in the text box that appears.

7. Click on “Next.” A message informing you that Windows Millennium has found “Windows Millennium Promise FastTrak100 Controller” should appear.
8. Click on “Next,” and then on “Finish.”
9. Choose “Yes” when asked if you want to restart your computer. Be sure to eject the diskette from drive A:.

Confirming Driver Installation in Millennium

To confirm that the driver has been properly loaded in Millennium, perform the following steps:
1. Choose “Settings” from the “Start” menu.
2. Choose “Control Panel,” and then double-click on the “System” icon.
3. Choose the “Device Manager” tab, and then click the “+” in front of “SCSI & RAID controllers.” “Windows Millennium Promise FastTrak100 Controller” should appear.

Windows 95/98

Installing Drivers During Windows 95/98 Installation

The following three sections detail the installation of the FastTrak100 drivers while installing Windows 95/98 (with the FastTrak100 controller card already in place). If you are installing the FastTrak100 drivers on a system with Windows 95/98 already installed, see “Installing Drivers with Existing Windows 95/98” on page 5-7.

Windows 98

1. After installing the FastTrak100 controller card and configuring the hard drive(s), partition and format your hard drive(s), if necessary.
2. Install Windows 98 normally.
3. After installation, go the “Start” menu and choose “Settings.”
4. From the “Settings” menu, choose “Control Panel.”
5. In the “Control Panel” window, double-click on the “System” icon.
6. In the “System” window, choose the “Device Manager” tab.
7. In the hierarchical display under “Other Devices” is a listing for “PCI RAID Controller.” Choose it and then press the “Properties” button.
8. Choose the “Driver” tab in the “Properties” window, choose “Update Driver,” and then press “Next.”
9. Choose “Search for a better driver than the one your device is using now (recommended),” then press “Next.”
10. Choose “Specify Location,” and then type “A:\WIN95-98” in the text box.
11. Insert the “FastTrak100 Driver” diskette into the A: drive.
12. Press the “Next” button. A message informing you that Windows 98 has found “Win95-98 Promise FastTrak100 (tm) Controller” should appear.

13. Press “Next,” then “Finish,” then “Yes” when asked if you want to restart your computer. Be sure to remove the diskette from drive A:.

Windows 95

1. After installing the FastTrak100 controller card and configuring the hard drives, partition and format your hard drive(s), if necessary.
2. Install Windows 95 normally.
3. After installation, go to the “Start” menu and choose “Settings.”
4. From the “Settings” menu, choose “Control Panel.”
5. In the “Control Panel” window, double-click on the “System” icon.
6. In the “System” window, choose the “Device Manager”tab.
7. In the hierarchical display under “Other Devices” is a listing for “PCI Mass Storage Controller.” Choose it and then press the “Properties” button.
8. Choose the “Driver” tab in the “Properties” window, and then press the “Update Driver” button.
9. When asked if you want Windows to search for the driver, choose “Yes (recommended).”
10. Insert the “FastTrak100 Driver” diskette into the A: drive, then press “Next.”
11. When Windows informs you that it was unable to find the drivers, press “Other Locations…”
12. In the “Select Other Location” dialog box, type “A:\WIN95-98”.
13. Press the “Next” button. A message informing you that Windows 95 has found “Win95-98 Promise FastTrak100 (tm) Controller” should appear.
14. Press “Finish.” (If Windows can’t find the “FastTrak100.MPD” file, type “A:\WIN95-98” in the “Copy files from:” text box).
15. Choose “Yes” when asked if you wish to restart the system, and remove the diskette.

Installing Drivers with Existing Windows 95/98

The following three sections detail the installation of FastTrak100 drivers on a system that has Windows 95/98 already installed. If you’re installing the FastTrak100 drivers on a system during a Windows 95/98 installation, see “Installing Drivers During Windows 95/98 Installation” on Page 5-6.

Windows 98

1. After installing the FastTrak100 controller card and configuring the hard drives, power up the system and boot Windows.
2. The “Add New Hardware Wizard” will appear, informing you that it has found a “PCI RAID Controller.”
3. Check the “Search for the best driver for your device” box and click the Next button.
4. Check the “Specify a Location” box and click Next button.
5. Type “A:\WIN95-98” in the text box that appears.

6. Insert the “FastTrak100 Driver” diskette in drive A:.
7. Click on “Next.” The Add New Hardware wizard will say it has found “Win95-98 Promise FastTrak100 controller”.
8. Click on “Next,” and then on “Finish.”
9. Choose “Yes” when asked if you want to restart your computer. Be sure to eject the diskette from drive A:.

Windows 95

1. After installing the Ultra100 controller card and configuring the hard drives, power up the system and boot Windows.
2. The “Update Device Drive Wizard” will appear, informing you that it has found a “PCI Mass Storage Controller.”
3. Insert the “FastTrak100 Driver” diskette in drive A:.
4. Type “A:\WIN95-98” in the text box, then click on “Next. Windows will inform you that it has found the “Win95-98 Promise FastTrak100 controller”.
5. Click on “Finish,” and when prompted, insert the “FastTrak100 Driver” diskette and click on “OK.”
6. If a message informing you that the file “FastTrak100.MPD” cannot be found, go to the “Copy files from:” text box and type: “A:\WIN95-98”.
7. Choose “Yes” when asked whether you want to start your computer. Be sure to remove the diskette from drive A

Confirming Driver Installation in Windows 98/95

To confirm that the driver has been properly loaded in Win 95/98, perform the following steps:
1. Choose “Settings” from the “Start” menu.
2. Choose “Control Panel,” and then double-click on the “System” icon.
3. Choose the “Device Manager” tab, and then click the “+” in front of “SCSI & RAID controllers. ” “Win95-98 Promise FastTrak100 controller” should appear.

DOS/Windows 3.1x

For first-time installation, follow the standard procedure of installing DOS on to your hard disk (partition all hard drives with FDISK and format before performing the following procedure):
1. Insert “Disk 1” of your DOS installation diskettes into drive A:.
2. Type “A:SETUP” at the “A:\” prompt.
3. Continue with normal DOS installation procedure, and refer to your DOS manual for additional details.
***NOTE**: The FastTrak100 BIOS supports both DOS and Windows 3.1x without software drivers.*

Windows NT4

Installing Drivers During Windows NT 4.0 Installation

1. Start the system installation by booting from the Windows NT disk:
   a) Floppy install: boot the system with the Windows NT installation diskettes.
   b) Floppyless install: boot from floppy and type "WINNT /B". After files have been copied, the system will reboot. On the reboot, press the "F6" key when the message "Setup is inspecting your computer's hardware configuration…" appears.
   c) CD-ROM disk install: boot from the CD-ROM disk and press the "F6" key when the message "Setup is inspecting your computer's hardware configuration…" appears.
2. When the "Windows NT Setup" window is generated, press "S" to Specify an Additional Device(s).
3. Press "O" to select "Other" and press the "Enter" key.
4. Insert the Promise Technology® FastTrak100 driver diskette into drive A: and press the "Enter" key.
5. Choose "Win NT Promise FastTrak100 (tm) Controller" from the list that appears on screen, then press the "Enter" key.
6. The Windows NT Setup screen will appear again saying "Setup will load support for the following mass storage devices:" The list will include "Win NT Promise FastTrak100 (tm) controller".

***NOTE**: If you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, continue to step 7.*

7. From the Windows NT Setup screen, press the Enter key. Setup will now load all device files and then continue the Windows NT installation.
8. After a successful installation, the "SCSI Adapter Setup" box will show that the "Win NT Promise FastTrak100 (tm) Controller" driver has been installed.

Installing Driver with Existing Windows NT 4.0

***WARNING**: If you plan to move your boot drive to a mirrored RAID 1 FastTrak array, hard drives should NOT be connected to the FastTrak100 controller card before performing the following procedure. The FastTrak100 drivers must be loaded on the system hard drive (running under the existing hard drive controller) before any hard drives are connected to the FastTrak100 controller card.*

1. Choose "Settings" from the "Start" menu.
2. Choose "Control Panel" from the "Settings" menu.
3. Double-click on the "SCSI Adapters" icon, which generates the "SCSI Adapters" dialog box.
4. Choose "Drivers," and then press "Add."

5. In the “Install Drivers” dialog box, press “Have Disk…”
6. When the “Install From Disk” appears, insert the “FastTrak100 Driver” diskette in drive A:.
7. Type “A:\NT4” in the text box window, then choose “OK.”
8. When the “Install Driver” dialog box appears, select “Win NT Promise FastTrak100 Controller” and then press “OK.”
9. When the “Select SCSI Adapter Option” dialog box appears, press “Install.”
10. After a successful installation, the “SCSI Adapter Setup” box will show that the “Win NT Promise FastTrak100 Controller” has been installed.
11. Power off your system.
12. If moving the boot drive to the FastTrak card, now attach the hard drives (see page **Error! Bookmark not defined.** otherwise reboot.

Removing the Driver from Windows NT 4.x

1. From the “Start” Button choose “Control Panel” in “Setup” group.
2. In “Control Panel,” select “SCSI Adapter,” next choose “Drivers” label
3. Choose “Remove” button.
4. After successful removing, the “SCSI Adapter Setup” box will show that “Win NT FastTrak100 RAID Controller” has been removed.

5-3 Frequently Asked Questions

This section lists frequently asked questions involving pre-installation, drive issues, installation, and post-installation.

Pre-Installation

(Speed, Device Types, Capacity, Cabling)

Q: What kind of hard drives can I use for a FastTrak100 array?

A: You *can* use any IDE/EIDE hard drive(s) to create arrays on the FastTrak100. You *should* use matching drives for multiple-drive arrays to maximize capacity usage as well as performance. Ultra ATA/100 drives are recommended for highest performance.

Q: Will APM (Advanced Power Management) work with HDDs on the FastTrak100?

A: APM will not work with HDDs on the FastTrak100. This is because the system sees the card as a SCSI card.

Q: Can I use ATAPI devices on the FastTrak100 controller?

A: No. There is no driver layer on the FastTrak100 controller which will support ATAPI packet messages.

Q: Will the FastTrak/100 work with a 37Mhz or 41Mhz PCI bus speed?

A:: The current PCI 2.1 specification is for a 33Mhz PCI bus speed. The FastTrak100 is designed around the specification. In most cases, a higher PCI bus speed will result in a variety of different errors. While some people have been able to get these higher speeds to work, since it is out of specification we cannot support it.

Q: How can I change the resources that the FastTrak uses?

A: The FastTrak100 is fully PnP. This means all the resources that it uses are given to it by the PnP BIOS on the motherboard. The FastTrak100 does support IRQ sharing, but this will not work unless ALL the concerned devices support the feature. If your motherboard allows you to control the assignment of these resources, you may be able to remedy the problem by "playing around" with them. You can also try resetting the configuration data in your CMOS. This is usually an option in the PnP section of your CMOS. Otherwise, the only way you might be able to affect these assignments is to switch the PCI slot that the card is in.

Q: How does the FastTrak100 RAID controller provide storage and/or data protection with their arrays?

A: FastTrak100 implements three different types of RAID levels as follows:

RAID 0 (stripe)

For capacity — The FastTrak100 array will be as big as the smallest HDD in the array times however many HDDs are in the array. Any larger HDDs will simply be truncated. The truncated space on the bigger HDDs will then be unusable.

For sustained data transfers — Using FastTrak100, a RAID 0 array consisting of two HDDs will transfer at about twice the speed of the slowest HDD in the array. A RAID 0 array consisting of four HDDs will transfer at about three times the speed of the slowest HDD in the array.

RAID 1 (mirror)

For capacity — The FastTrak100 array will be as big as the smallest HDD in the array. The larger HDD will simply be truncated. The truncated space on the bigger HDD will then be unusable.

For sustained data transfers — The FastTrak100 array will write data at the rate of the slowest HDD in the array. The FastTrak100 array will read data at twice the rate of the slowest HDD in the array.

JBOD (spanning)

For capacity — The FastTrak100 array will combine the sizes of the HDDs in the array. As soon as one HDD is filled to capacity, the next HDD will automatically be used.

For sustained data transfers — There is no performance increase with spanning (reading or writing).

Drive Issues

Q: Can I add a drive to a FastTrak66 RAID array via hot-swap and dynamically adjust the array size/configuration?

A: No. The FastTrak100 system does not support dynamically adjustable RAID size/configurations.

Q: Do the HDDs on the FastTrak100 have to be the same size?

A: The HDDs that you use with the FastTrak100 do not have to be the same size. If the sizes differ, the FastTrak100 will "adjust" the HDDs so that they are compatible. Basically, it will truncate the bigger HDD so the sizes match. Any unused space that results from this is unusable, so don't use HDDs that differ too much. It'll work, but it's a waste.

Q: Can I take a set of drives which make up an array created on one FastTrak100 server and move it to another FastTrak100 server?

A: Yes. All FastTrak100 controllers read the arrays the same way. Once the drives are all connected, you must restart the system for it to recognize the newly-inserted array configuration.

Q: Can I take a drive used in a FastTrak100 array and access it directly with a different controller, such as the one integrated on the motherboard?

A: Yes, but only under certain configurations. The following array configurations will allow the drive(s) to be accessed individually on another controller: mirror (RAID 0), single drive striped (RAID 1), or single drive spanned (JBOD). Multiple drives striped or spanned will not work. Also, the controller must address the drives as LBA, not CHS.

Q: If I have a problem with one of the drives on the FastTrak100, how can I low level format it to correct the problem?

A: Do NOT do this. Low-level formatting IDE drives is unnecessary and generally does not correct problems which might be experienced during use. Errors such as bad sectors or ECC/CRC failure are best remedied by completely replacing the drive. For this reason, drives attached to the FastTrak100 controller should NOT be low level formatted.

Q: Do I have to install disk management software on my array in order to access the full storage capacity of drives?

A: No! Disk management software would only complicate things. The array should be fully addressable by your O/S as it is. Remember that some operating systems have varying limits on the sizes of partitions and logical drives that can be defined. Consult your O/S documentation about partitioning larger drives.

Q: What system BIOS CMOS settings do I use for the drives on the FastTrak100 controller?

A: None. The drives on the FastTrak100 controller are supported by the FastTrak100 BIOS and/or an O/S drivers, not by your system BIOS.

Q: How do I partition/format my FastTrak100 RAID array?

A: The FastTrak100 "fools" the system into thinking that it's dealing with a single HDD. Therefore, anything that you can do to a single HDD can also be done to a FastTrak100 array. You can, and should, use the FDISK and FORMAT utilities to partition/format the array. You can partition the array however you see fit. You can format the array with whatever file system you wish.

Installation Issues

(Capacity, Booting)

Q: Why are some drives recognized by the FastTrak100 Array Setup utilities with only partial capacity?

A: Some hard drive models are shipped with a jumper that reduces the addressable capacity of the drive to prevent problems with older systems which won't support larger drives. Consult the documentation accompanying the hard drive to set the jumper appropriately in order to utilize the full capacity of the drive.

Q: How can I change the system boot sequence in order to boot from the FastTrak100 array?

A: The boot sequence is controlled by the system BIOS. As far as the system BIOS is concerned, the FastTrak100 controller and defined arrays are categorized as a "SCSI" device (even though the BIOS will not attempt to access the FastTrak100 as any type of SCSI device). This allows you to set the boot sequence in your BIOS CMOS setup utility to boot from "SCSI" (an add-in controller like the FastTrak100) first, rather than "IDE" (an IDE controller built onto the motherboard or one which effectively replaces it). If there are multiple SCSI add-in controllers in the system, then the boot sequence among them will be determined exclusively by their PCI slot priority. PCI slot #1 will be first, slot #2 second, etc. Put the FastTrak100 controller in the PCI slot where it will be accessed ahead of other SCSI controllers if you want to boot from the array.

Q: How can I change the boot sequence between a PCI SCSI card and the FastTrak100 RAID array?

A: Since all PCI devices are all PnP, it is difficult to determine which device is addressed first. Some newer motherboard BIOSes may use advanced options that identify devices and allow you to select which device will be assigned resources first. Otherwise you may have to physically switch the device cards on the PCI slots so that the boot device is in the highest priority slot number (see previous question). If

you do not require the FastTrak100 BIOS to boot from an array and it is only to be used through a driver under the O/S, one simpler solution would be to disable the FastTrak100 BIOS so that it does not affect the boot sequence at all.

Post-Installation

(Memory Managers, FDISK)

Q: Why does my system reboot after the QEMM driver loads from CONFIG.SYS?

A: The problem lies in the QEMM "Stealth" feature. This feature places the drive information from the DOS System area into the upper reaches of RAM where Windows resides. This causes the FastTrak100 to lose track of its drives when asked to execute the next line in the CONFIG.SYS file. This forces the reboot that you see. Disable QEMM's stealth feature to correct this problem.

Q: Why can't I see the drives on the FastTrak100 under FDISK?

A: The FastTrak100 controller is dedicated to RAID array management and does not provide any means of addressing individual hard drives through the Int 13h interface used by FDISK. In order to access drives on the FastTrak100 from MSDOS at all, you must first create a RAID array.

Appendix A

AwardBIOS POST Messages

During the Power On Self-Test (POST), if the BIOS detects an error and correction is needed, then, the BIOS will activate the alarm or display a message.

If a message is displayed, it will be accompanied by the following:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

POST Beep Codes

Currently, there are several kinds of beep codes in the Award BIOS. For example, a single long beep followed by two short beeps indicates that a video error has occurred and that the BIOS cannot initialize the video screen to display any additional information. A single long beep that sounds repeatedly indicates that an error has occurred in Rambus error has occurred. Refer to Appendix C for a complete list of beep codes.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST routine. This list includes messages for both the ISA and the EISA BIOS.

CMOS BATTERY HAS FAILED
CMOS battery is no longer functional. It should be replaced.

CMOS CHECKSUM ERROR
The CMOS checksum is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

DISPLAY SWITCH IS SET INCORRECTLY

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

ERROR INITIALIZING HARD DISK CONTROLLER

Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

Cannot find or initialize the floppy drive controller. make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Memory Address Error at ...
Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory parity Error at ...
Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory Verify Error at ...
Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

OFFENDING ADDRESS NOT FOUND
This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

OFFENDING SEGMENT:
This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

PRESS A KEY TO REBOOT
This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

PRESS F1 TO DISABLE NMI, F2 TO REBOOT
When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM PARITY ERROR - CHECKING FOR SEGMENT ...
Indicates a parity error in Random Access Memory.

SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...
Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

FLOPPY DISK(S) fail (80) → Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40) → Floppy Type dismatch.

Hard Disk(s) fail (80) → HDD reset failed

Hard Disk(s) fail (40) → **HDD controller diagnostics failed.**

Hard Disk(s) fail (20) → **HDD initialization error.**

Hard Disk(s) fail (10) → **Unable to recalibrate fixed disk.**

Hard Disk(s) fail (08) → **Sector Verify failed.**

Keyboard is locked out - Unlock the key.
BIOS detect the keyboard is locked. P17 of keyboard controller is pulled low.

Keyboard error or no keyboard present.
Cannot initialize the keyboard. Make sure that the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST loop.
System will repeat POST procedure infinitely while the P15 of keyboard controller is pull low. This is also used for M/B burn in test.

BIOS ROM checksum error - System halted.
The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail..
BIOS reports the memory test fail if the onboard memory is tested error.

Appendix B
AwardBIOS POST Codes

This section lists the POST (Power On Self Testing) Codes for the Award BIOS.

POST (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	● Disable PS/2 mouse interface (optional). ● Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). ● Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.

Debug LED Codes (hex codes displayed by onboard LEDs D16, D17, D18

POST Code	Hex Code	Description
C1h	001b	Memory Detection
05h	010b	BIOS Shadowing
07h	011b	KBC Initialization
0Eh	100b	Shadow RAM Test
14h	101b	Chipset Defaults Loaded
26h	110b	Clock Generator Configured
2Bh	111b	Video Initialization
52h	000b	Just Clear LEDs

POST (hex)	Description
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead. 3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information. 4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 5. Early PCI initialization: -Enumerate PCI bus number -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0.
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	• Program CPU internal MTRR (P6 & PII) for 0-640K memory address. • Initialize the APIC for Pentium class CPU. • Program early chipset according to CMOS setup. Example: onboard IDE controller. • Measure CPU speed. • Invoke video BIOS.
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved

POST (hex)	Description
2Dh	1. Initialize multi-language 2. Put information on screen display, including Award title, CPU type, CPU speed ….
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	1. Calculate total memory by testing the last double word of each 64K page. 2. Program writes allocation for AMD K5 CPU.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	1. Display PnP logo 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.

POST (hex)	Description
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	1. Initialize Init_Onboard_Super_IO switch. 2. Initialize Init_Onboard_AUDIO switch.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 Mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
70h	Reserved
71h	Reserved
72h	Reserved
73h	(Optional Feature) Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed
74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM…..
76h	Reserved
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect & install co-processor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: ◆Clear EPA or customization logo.

POST (hex)	Description
80h	Reserved
81h	Reserved
82h	1. Call chipset power management hook. 2. Recover the text font used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs.
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	1. Enable L2 cache 2. Program boot up speed 3. Chipset final initialization. 4. Power management final initialization 5. Clear screen & display summary table 6. Program K6 write allocation 7. Program P6 class write combining
95h	1. Program daylight saving 2. Update keyboard LED & typematic rate
96h	1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)

Notes

Appendix C
AwardBIOS Error Beep Codes

This section lists the Award BIOS Error Beep Codes.

Beep Code	Error Message Description
1 short beep	System boot.
2 short beeps	Incorrect CMOS setting.
1 long + 1 short	DRAM error.
1 long + 2 short	VGA error.
1 long + 3 short	Keyboard error.
1 long + 9 short	ROM error.
Long beeps	Memory module error.
High beeps	Power error.

Notes